1000185002	3.2
0608	

Dumper

3001

OPERATOR'S MANUAL

1000185002

Documentation

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Service manual	1000156004
Spare parts list	Up to serial number AD310241: 1000173900 From serial number AE310242: 1000183393

Legend

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The cover features the machine with possible optional equipment.

Neuson Baumaschinen GmbH
Haidfeldstrasse 37
A-4060 Linz-Leonding

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1 Introduction

1.1 Important information on this Operator's Manual

Please store the Operator's Manual in the storage bin under the engine cover.

This Operator's Manual contains important information on how to work safely, correctly and economically with the machine. Therefore, it aims not only at new operators, but it also serves as a reference for experienced ones. It helps to avoid dangerous situations and reduce repair costs and downtimes. Furthermore, the reliability and the service life of the machine will be increased by following the instructions in the Operator's Manual. This is why **the Operator's Manual must always be kept at hand on the machine.**

Your own safety, as well as the safety of others, depends to a great extent on how the machine is moved and operated. Therefore, carefully read and understand this Operator's Manual prior to the first drive. This Operator's Manual will help to familiarize yourself more easily with the machine, thereby enabling you to use it more safely and efficiently.

Prior to the first drive, carefully read chapter “Safety Instructions” as well, in order to be prepared for possible dangerous situations, as it will be too late for it during operation. As a rule, keep the following in mind:

Careful and prudent working is the best way to avoid accidents!

Operational safety and readiness of the machine do not only depend on your skill, but also on maintenance and servicing of the machine. This is why regular maintenance and service work is absolutely necessary. Extensive maintenance and repair work must always be carried out by an expert with appropriate training. Insist on using original spare parts when carrying out maintenance and repair work. This ensures operational safety and readiness of your machine, and maintains its value.

Your Wacker Neuson dealer will be pleased to answer any further questions regarding the machine or the Operator's Manual.

Abbreviations / symbols

- This symbol stands for a list
  - Subdivision within lists or an activity. Follow the steps in the recommended sequence

☞ *This symbol requires you to carry out the activity described*

➥ Description of the effects or results of an activity

n. s. = not shown

“Opt” = option Stated whenever controls or other components of the machine are installed as an option.

1.2 Brief description

The model 3001 dumper is a self-propelled work machine.
Get informed on and follow the legal regulations of your country.
This machine is a versatile and powerful helper for moving earth, gravel and debris on construction sites and elsewhere. The main components of the machine are:

- Rollbar
- Hydraulic swivel dump bucket or front dump bucket
- Yanmar three cylinder diesel engine
- Sturdy steel sheet chassis

1.3 Operator qualifications

Requirements to be met by the operator

Earth moving machines may be driven and serviced only by persons who meet the following requirements:

- 18 years or older
- Physically and mentally suited for this work
- Persons have been instructed in driving and servicing the earth moving machine and have proven their qualifications to the contractor
- Persons are expected to carry out work reliably.

They have been appointed by the contractor for driving and servicing the earth moving machine.

Get informed on and follow the legal regulations of your country.

1.4 EC Declaration of Conformity for 3001 dumper

CE

EG-Konformitätserklärung

EC-Declaration of Conformity

Déclaration de conformité

im Sinne der EG-Maschinenrichtlinie Anhang II A 98/37/EC,
in addition to the EC machine directives Annex
dans l'esprit des directives du conseil relatives aux machines Annexe

Hiermit erklären wir, daß der Kompakt-Allraddumper
We declare, that the compact-dumper
Nous déclarons, que le dumper compact

Typ 3001 Fahrgestell-Nr. .....
type *serial-no.*
type *numéra de série.*

folgenden einschlägigen Bestimmungen entspricht:	98/37/EC
fulfills the *following directives:*	89/336EEC
est en conformité avec des prescriptions suivant:	2000/14/EC

Angewendete harmonisierte europäische Normen	EN 12100-1 : 2003
Harmonized standards applied	EN 12100-2 : 2003
Normes euopéen harmonisées appliquées	EN 474-1 1994
	EN 474-6 1996

Garantierter Schalleistungspegel L_{WA} 101
Guarantee weighted Sound Power Level
Niveau sonore garanti de la puissance

Gemessener Schallleistungspegel L_{WA} 101
Measured weighted Sound Power Level
Niveau sonore mesuré de la puissance

Freiwilligen Baumusterprüfung:	Baumusterprüfungsbescheinigung-Nr.:
Voluntary type-examination	*Eximination certificate No.:*
Effectuer l´examen de type volontaire	*Attestation de type n°:*

Tredegar, 18/12/2007

....

Ort, Datum / Place, date / Lieu, date Technical Director

1.5 Type labels and component numbers

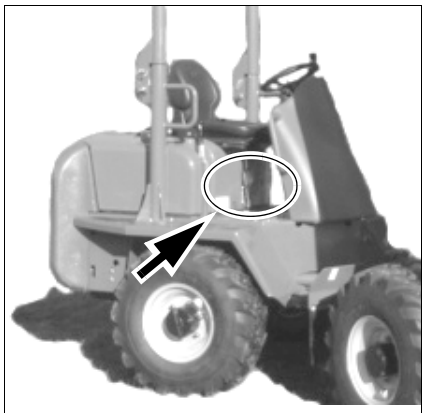


Fig. 1: Type label: location

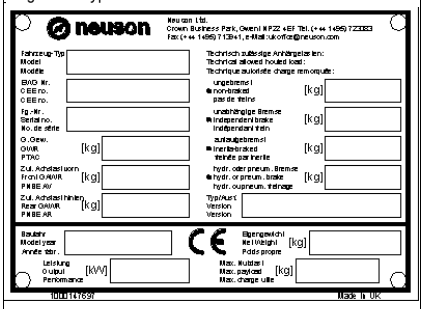


Fig. 2: Type label

Serial number

The serial number is stamped on the machine chassis. It is also located on the type label.
The type label is located at the rear right of the control stand.
Type label information
Example: 3001

Model:	3001
Year:	----------
PIN:	AE 31....
Power:	----------
Mass:	----------
Load:	----------

Other information *– see chapter 6 Specifications* on page 6-1

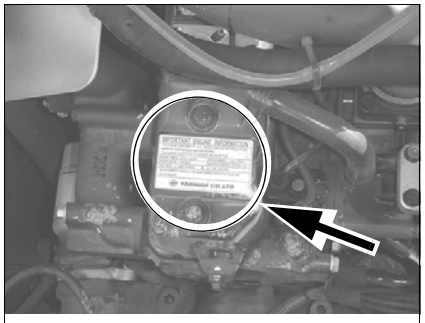


Fig. 3: Yanmar diesel engine number

Engine number

The type label (arrow) is located on the cylinder-head cover of the engine.

Example: Yanmar 46557

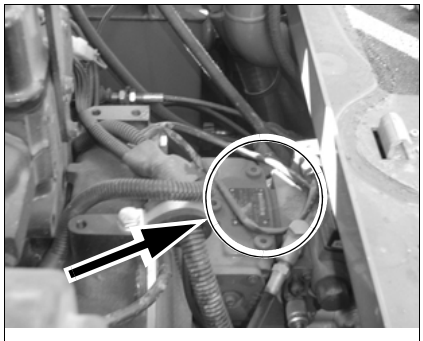


Fig. 4: Number of variable displacement pump

Hydraulic pump number

The type label (arrow) is located on the hydraulic pump housing.

Fig. 5: ROPS type label

ROPS certification number

The label is located on the left on the ROPS.

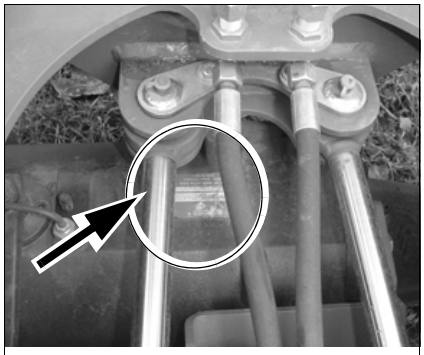
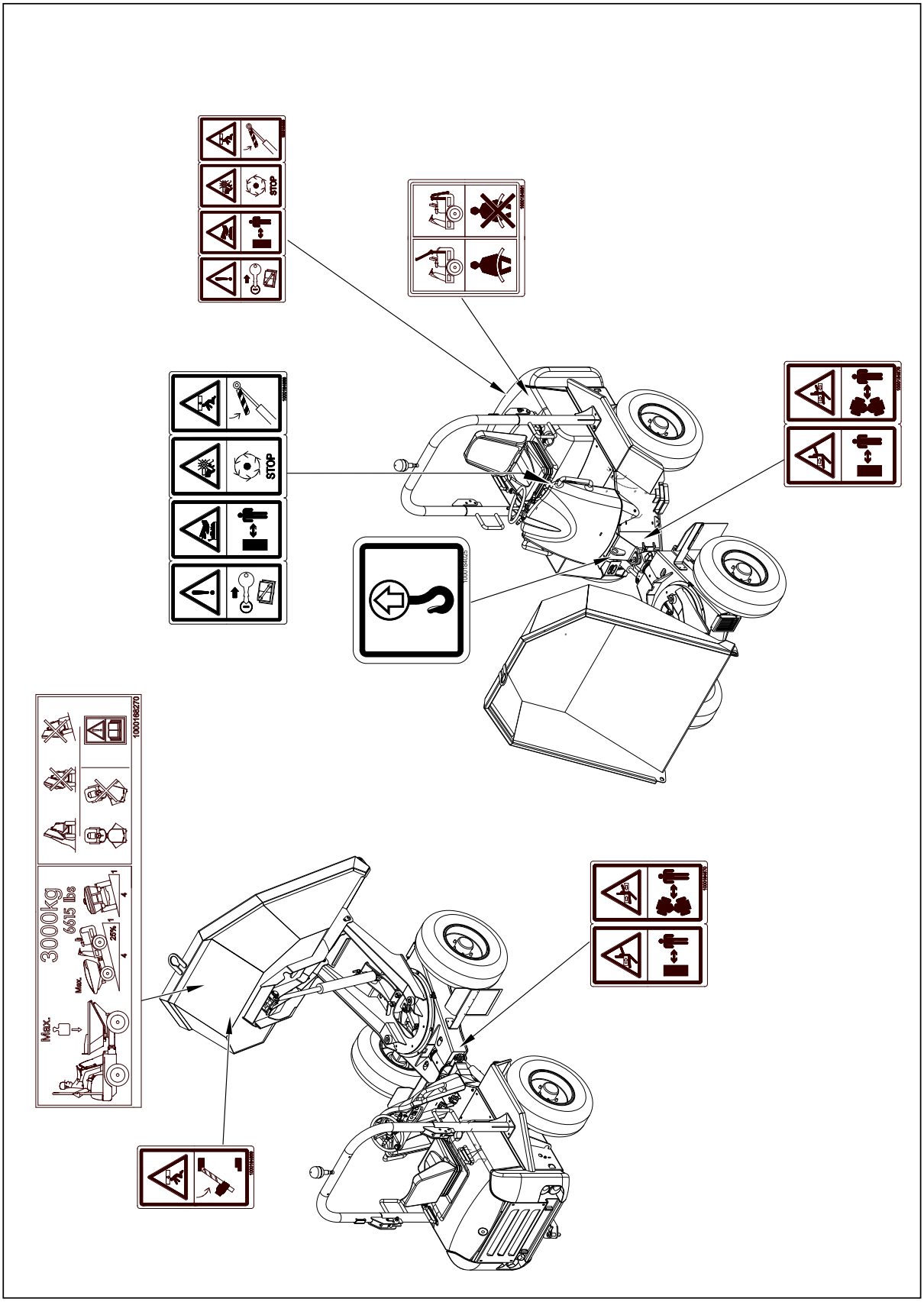


Fig. 6: Axle type label

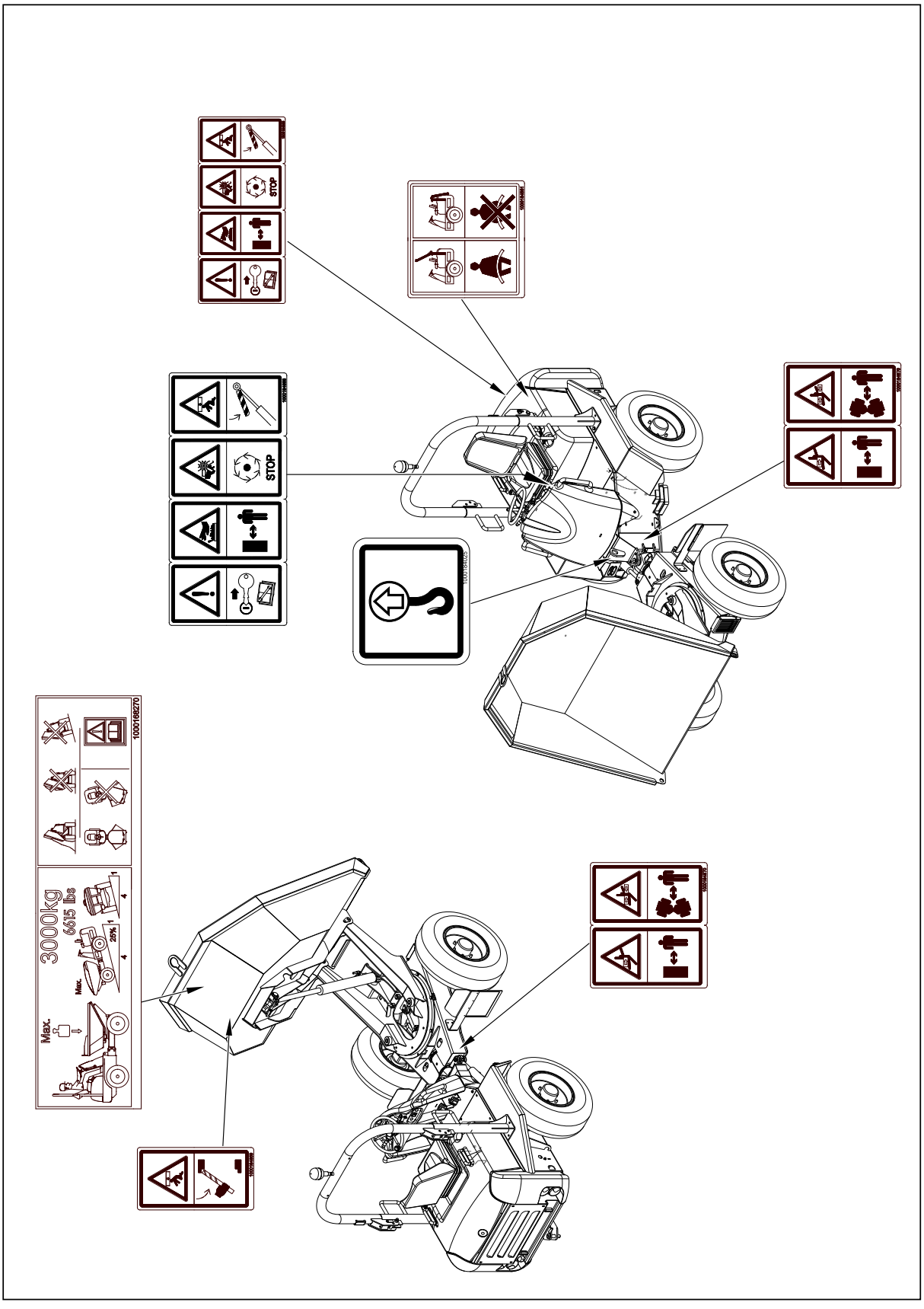
Axle number

The type label (arrow) is located on the upper side of the axle housing.

1.6 Label Overview Front Tip 3001



1.7 Label Overview Powerswivel 3001



1.8 Symbol descriptions

The following symbols are displayed on the machine to provide pictorial information to the user. The information and explanations are provided to avoid misinterpretation by the user. The symbols have been chosen to provide important information to those involved with operating, adjusting, maintaining, and repairing this machine.

Fig. 7: Eye hook label

Description

Lift the machine or machine parts only by means of these lifting points.

– *see chapter 3.19 Lifting the machine* on page 3-28

Location

On the rear chassis next to the lifting point

Fig. 8: Label for points used for strapping down the machine

Description

Tie down points.

Location points designated for tie down of the machine during transport to prevent movement during transport.

Location

In the ner of the dump bucket

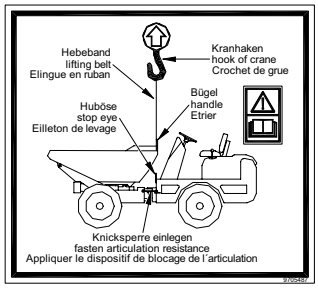


Fig. 9: Label with indications for loading the machine

Description

Loading indications for machine.

– *see chapter Strapping down the machine* on page 3-30

Location

On the engine cover

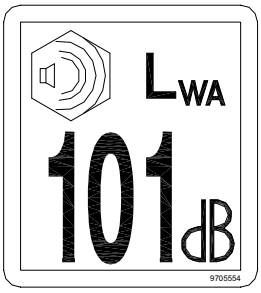


Fig. 10: Noise level label

Description

Noise levels produced by the machine.

L_{WA} = sound power level

Other information – *see chapter 6.11 Noise levels* on page 6-4

Location

On the engine cover

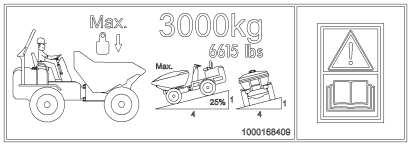


Fig. 11: Driving on slopes Front Tip

Description

This label indicates the maximum authorized angle of inclination for driving on slopes, whatever the position of the machine.

Location 3001 Front Tip

On the dump bucket

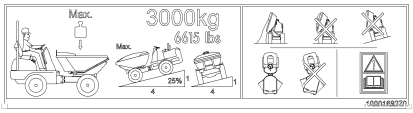


Fig. 12: Driving on slopes Powerswivel

Description

This label indicates the maximum authorized angle of inclination for driving on slopes, whatever the position of the machine.

Location 3001 Powerswivel

On the dump bucket

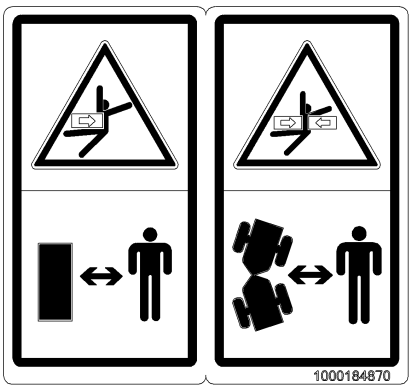


Fig. 13: Keep a safe distance

Description

1. Stay away from the machine work area.
2. Articulation joint crushing hazard. Stay away!

Location

On the left and right of front chassis

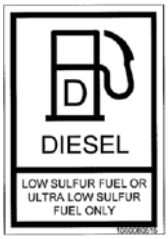


Fig. 14: Diesel

Description

Fill location for diesel fuel only.

Location

On the fuel filler inlet

Fig. 15: Hydraulic oil

Description

Hydraulic oil filler inlet. Use only specified hydraulic fluid.

– *see chapter Filling up hydraulic oil* on page 5-19

Location

On the filler inlet of the hydraulic oil tank

Fig. 16: Maintenance prop

Description

Fold down and secure the maintenance prop before carrying out work underneath the dump bucket.

Location

On the swivelling console at the front

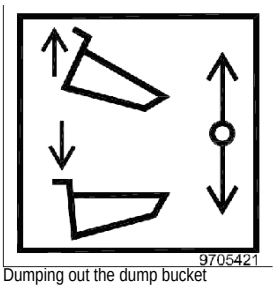


Fig. 17: Dumping out the dump bucket

Description

Shows how the dump bucket can be dumped out.

Location

On the engine cover

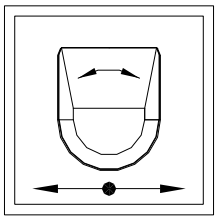


Fig. 18: Swivelling the dump bucket

Description

Shows how the dump bucket can be swivelled.

Location

On the engine cover

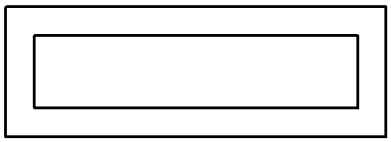


Fig. 19: Serial number

Description

Machine serial number label

Location

At the front right of the chassis

Fig. 20: Caution

Description

1. Attention! Remove starter key and read the Service Manual before servicing the machine.

2. Hot surface! Do not touch. Keep a safe distance from the machine.

3. Cutting hazard. Cooling fan can cut when rotating. Stop engine before working on the engine or cooling system.

4. Crushing hazard. Place safety strut in blocking position on the hydraulic cylinder before performing maintenance.

Location

On the engine cover

Fig. 21: Lap belt

Description

Always fasten the seat belt if the rollbar is raised!

Do not use the seat belt when the ROPS is lowered to the stored position.

Location

On the engine cover

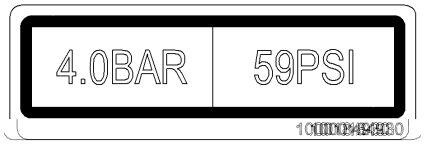


Fig. 22: Tire pressure

Description

Recommended tire inflation pressure. Read the Operator's Manual for detailed instructions and load ratings.

Location

On the mudguards and the dump bucke

2 Safety Information

2.1 Safety Symbols Found in this Manual

This is the safety alert symbol. It is used to alert you to potential personal hazards.

- Obey all safety messages that follow this symbol.

DANGER

DANGER indicates a situation which, if not avoided, will result in death or serious injury.

☞ *Obey all safety messages that follow this symbol to avoid injury or death*

- Aufzählung zur Vermeidung

WARNING

WARNING indicates a situation which, if not avoided, could result in death or serious injury.

☞ *.Obey all safety messages that follow this symbol to avoid possible injury or death.*

- Aufzählung zur Vermeidung

CAUTION

CAUTION indicates a situation which, if not avoided, could result in minor or moderate injury.

☞ *Obey all safety messages that follow this symbol to avoid possible minor or moderate injury.*

- Aufzählung zur Vermeidung

NOTICE: Used without the safety alert symbol. NOTICE indicates a situation which, if not avoided, could result in property damage.

Important

Iidentifies an instruction that, when followed, provides for a more efficient and economical use of the machine.

Environment

Failure to observe the instructions identified by this symbol can result in damage to the environment. The environment is endangered if environmentally material, such as waste oil, is not properly used or disposed of.

2.2 Warranty

Warranty claims must be submitted to your Wacker Neuson dealer only.

2.3 Designated Use

1. In accordance with its designated use, the machine may be used ONLY for moving earth, gravel, coarse gravel or ballast and rubble.
2. No other applications are designated for the use of the machine. Wacker Neuson will not be liable for damage resulting from use other than mentioned above. The user alone will bear the risk.
3. “Designated use” also includes observing the instructions set forth in this Operator’s Manual and observing the maintenance schedule.
4. Machine safety can be negatively affected by carrying out machine modifications without proper authority and by using spare parts, equipment, attachments and optional equipment which have not been checked and released by Wacker Neuson. Wacker Neuson will not be liable for damage resulting from unapproved parts or unauthorized modifications.
5. Wacker Neuson shall not be liable for personal injury and/or damage to property caused by failure to observe the safety instructions on labels and in this Operator’s Manual, and by the negligence of the duty to exercise due care when:
   - transporting the machine
   - operating the machine
   - servicing the machine and carrying out maintenance work
   - repairing the machine

   This is also applicable when special attention has not been drawn to the duty to exercise due care.
6. Read and understand this Operator’s Manual before starting up, moving, operating, servicing or repairing the machine. Observe all safety instructions.
7. The machine shall NOT be used for transport jobs on public roads!

2.4 General Conduct and Safety Instructions

Conditions for use

- The machine has been designed and built in accordance with state-of-the-art standards and recognized safety regulations. Nevertheless, its use can constitute a risk to the user or to third parties, or cause damage to the machine and to other material property.
- Read and follow this Operator’s Manual and other manuals that accompany the machine.
- The machine must only be used in accordance with its designated use and the instructions set forth in this Operator’s Manual.
- The machine must only be used by qualified operators who are fully aware of the risks involved in operating the machine.
- Do not start, move or operate a damaged or defective machine. Any mechanical dysfunctions, especially those affecting the safety of the machine, must be repaired immediately. Only qualified technicians shall determine how to move a damaged or defective machine to a safe place for diagnoses and repair.

- The user/owner commits himself to operate and keep the machine in serviceable condition and, if necessary or required by law, to require the operating or servicing persons to wear protective clothing and safety equipment.

User training and knowledge

- Always keep this Operator's Manual and other manuals that accompany the machine in their storage compartment provided in the operator station on the machine. Immediately replace an incomplete or illegible Operator's Manual.
- All persons working on or with the machine must read and understand the safety information in this Perator's Manual before beginning work. This applies especially to persons working only occasionally on the machine, such as performing set-up or maintenance tasks.
- Follow, and instruct the operator in, legal and other mandatory regulations relevant to accident prevention and environmental protection.These may include handling hazardous substances, issuing and/or wearing personal protective equipment, or obeying traffic regulations.
- The user/owner must regularly ensure that all persons entrusted with operation or maintenance of the machine are working in compliance with this Operator's Manual and are aware of the risks and safety factors of the machine.

Preparing for use

- Before starting up the machine, ALWAYS inspect the machine to make sure that it is ready for safe work and travel operation.
- Wear close-fitting work clothes that do not hinder movement. Tie back long hair and remove all jewelry (including rings).

Modifications and spare parts

- NEVER make any modifications, additions or conversions to the machine and its superstructures (for example, cab, etc.), or the machine's attachments, without the approval of Wacker Neuson! Such modifications may affect safety and/or machine performance. This also applies to the installation and adjustment of safety devices and valves, as well as to welding work on load-bearing elements.
- Spare parts must comply with the technical requirements specified by Wacker Neuson. Contact your Wacker Neuson dealer for assistance.

2.5 Operator and Technician Qualifications and Basic Responsibilities

User/owner responsibility

- Only allow trained and experienced individuals to drive, maintain, or repair the machine. NEVER let unauthorized or underaged persons operate the machine.
- Clearly and unequivocally define the individual responsibilities of the operator and technician for operation, maintenance, and repair.
- Define the machine operator's responsibilities on the job site and for observing traffic rules. Give the operator the authority to refuse instructions by third parties that are contrary to safety.

- Do not allow persons to be trained or instructed by anyone other than an experienced person. Also, NEVER allow persons taking part in a general training course to work on or with the machine without being supervised by an experienced person.

Repair person qualifications

- Work on the electric system and equipment, on the undercarriage and the steering and brake systems shall be carried out only by skilled individuals who have been specially trained for such work.
- Work on the hydraulic system of the machine must be carried out only by a technician with special knowledge and experience in hydraulic equipment.

2.6 Safety instructions Regarding Operation

Preparing for use

- Keep the machine clean. This reduces the risk of fire hazards (such as from combustible materials like rags), and reduces the risk of injury or operational accidents that can be caused by dirt build-up on the drive pedals, foot rests and steps.
- Observe all safety, warning, and informational signs and labels on the machine.
- Start and operate the machine from the seat only.
- Operating the machine with the ROPS rollbar is allowed only with the seat belt fastened and tightened.
- The operator must sit in the seat, fasten and adjust the seat belt before putting the machine into operation.
- Always adjust the seat position before starting work. Never change the seat position when driving or working!
- Make sure that all safety devices are properly installed and functional before starting work.
- Before putting the machine/attachment into operation (startup/moving), make sure that no one in the immediate vicinity will be at risk.

Startup and shutdown

- Carry out startup and shutdown procedures according to this Operator's Manual.
- Observe all indicator lights.
- Do not use starting fluid (for example, ether) especially in those cases in which a heater plug (intake air pre-heating) is used at the same time.
- Make sure the drive levers, the signaling and the light systems are functional before operating the machine, and also before restarting after a work interruption.
- Make sure that the service brake and the parking brake are functional before operating the machine, and also after a work interruption. The drive must be switched off if the parking brake is applied.
- Fold up the control lever base before releasing the seat belt in order to avoid unintentional operation.

Work area awareness

- Familiarize yourself with the surroundings and circumstances of the work site before beginning work. Be aware of:
  - obstacles in the working and traveling area
  - the soil weight-bearing capacity

  - any necessary barriers separating the work site from public roads
- Always keep a safe distance from the edges of building pits and slopes.
- Look out for the following when working in buildings or in enclosed areas:
  - height of the ceiling/clearances
  - width of entrances
  - maximum load of ceilings and floors
  - sufficient room ventilation—danger of carbon monoxide poisoning!
- Observe the danger area. See “Danger area awareness”.
- Use the rearview mirror to stay aware of work area obstacles and personnel.
- Always switch on the work lights in conditions of poor visibility and after dark. However, make sure that users of public roads will not be temporarily blinded by the work lights.
- Provide additional lighting of the work area if the lights of the machine are not sufficient for carrying out work safely.
- Drive slowly in meadows, on leaves or wet steel plates. The machine can slip even if the ground is level.

Danger area awareness

- The danger area is the area in which persons are in danger due to the movements of the machine, work equipment, additional equipment, or material.
- The danger area also includes the area affected by falling material, equipment or construction debris. The danger area must be extended by 0.5 m (20 inches) in the immediate vicinity of buildings, scaffolds, or other elements of construction.
- Seal off the danger area if it is not possible to keep a safe distance. Stop work immediately if persons do not leave the danger area in spite of warnings!

Operating the machine

- Never operate the machine if you are standing on the ground.
- Operate the machine ONLY when you are seated and you have fastened your seat belt. Switch off the engine before releasing the seat belt.
- On sloping terrain, adapt your drive speed to the prevailing ground conditions.
- Never get on or off a moving machine, and do not jump off the machine.

Special operating notes

- Always adapt your travel speed to the road and ground conditions, and to the visibility conditions. Ask for help in navigating difficult passages or obstacles. To avoid tipping the dumper, travel appropriately and slowly as conditions dictate. This applies in particular to rough terrain, the edges of trenches, curves and emergency braking. Use only the low speed range when traveling off-road (see the turtle indicator on the instrument panel).
- Proceed with extreme care when driving on slopes. The dumper can travel on firm ground in all positions on slopes up to 25%.
- Make sure the engine cover is closed and locked before starting the dumper.
- Apply the parking brake when parking the machine. If possible, do not park the dumper on slopes. If this cannot be avoided, use wheel chocks, etc. Lower the dump bucket before leaving the dumper. Do not use the parking brake as a service brake. The parking brake can be used as an emergency brake in the event of a service brake failure.

- Keep the base plate of the dump bucket in a clean condition so that the material is easily dumped out of the dump bucket. Load only material that can be easily dumped out.
- Never travel too close to the edges of unsecured pits, precipices, etc. The pressure of the wheels on the ground can cause the edge to give way.
- Never dump material into trenches where people are working. If the operator cannot see into the trench, he or she must be guided by someone who can see into the trench.
- Always make sure the service and parking brake are serviceable before operating.

Carrying passengers

- Apart from the driver, do not allow anyone to ride on the machine.
- Never lift, lower, or carry persons in the work equipment or attachments.
- Never install a man basket or a working platform to the machine.

Mechanical integrity

- Take the necessary precautions to make sure the machine is used only when in a safe and reliable state.
- Operate the machine ONLY if all protective and safety-oriented devices (ROPS, removable safety devices, soundproofing elements, mufflers, etc.) are in place and fully functional.
- Before operating the machine, inspect it for visible signs of damage and defects. Report any changes, including changes in the machine function and response to your supervisor immediately!
- If the machine is functioning unpredictably, stop the machine immediately, lock it, and report the malfunction to a qualified technician or job supervisor. Safety-relevant damage or malfunctions of the machine must be rectified immediately.

Driving on public roads

- When traveling on public roads, ways and places, observe all applicable traffic regulations. If necessary, make sure beforehand that the machine is in compliance with these regulations.
- When crossing underpasses, gates, bridges and tunnels, or when passing under overhead lines, make sure the clearance height and width are sufficient.

2.7 Trailering and Transport

Trailers

- Even though the dumper is equipped with brackets, it is not a tractor and may not be used as such in difficult terrain.
- If the dumper is used on construction sites for towing trailers, weight the dump bucket with 25% of the payload. However, do not exceed the dumper's maximum payload with the combination of towed equipment and the weight in the dump bucket!
- Secure the towing pin of the towing gear with a locking pin.
- Counterweights affect handling and the machine's steering capability.
- Use special care when coupling trailers, and couple them with the specially required devices only.
- Always secure trailers against unintentional disconnection.

- If optional equipment such as a trailer is installed, make sure that all lights and associated indicator lamps are installed and functional.

Transport

- The machine must be towed, loaded, and transported only in accordance with procedures described in this Operator's Manual.
- For towing the machine, observe the prescribed transport position, permissible speed, and proper towing procedures described in the Operator's Manual.
- Make sure that the vehicle transporting the machine has a sufficient power and weight.
- Safely secure the machine on the transporting vehicle. Use the specified tie-down points.

2.8 Temperature Range

The machine may only be used between a maximum +45°C (113°F) and minimum -15°C (5°F). Contact your Wacker Neuson dealer if you intend to use the machine in other temperature ranges. Store the machine in a dry place at room temperature (about 15°C, or 59°F). Observing these temperature ranges will help to prolong the machine's service life.

2.9 Safety Guidelines for Maintenance

General maintenance notes

- Adhere to prescribed intervals or those specified in this Operator's Manual for routine checks/inspections and maintenance work.
- For inspection and maintenance work, ensure that all tools and workshop equipment are capable of performing the tasks prescribed. Do not use defective or broken tools. Use certified measuring devices that are routinely calibrated for accuracy.
- Replace hydraulic hoses within stipulated and appropriate intervals even if no safety-relevant defects have been detected.
- Make sure all consumables and replaced parts are disposed of safely and with minimum environmental impact.
- Always tighten any screws, electrical connections, or hose connections that may have been loosened during maintenance.
- Upon completion of the maintenance and repair work, immediately refit and check any safety devices removed for set-up or maintenance purposes.

Personal safety measures

- Brief the technician and the operator before beginning maintenance or repair work. Appoint someone to supervise the activities.
- Always work in groups of two when diagnosing a machine problem requiring the engine to be running. Both persons must be trained on the machine—one person must be seated on the seat and maintain visual contact with the other person.
- Observe the specific safety instructions in the Maintenance section of this Operator's Manual.
- Always keep a safe distance from all rotating and moving parts, for example, fan blades, V-belt drives, PTO shaft drives, fans, etc.
- Before starting work on machine, always ensure safe blocking/support.
- Apply special care when working on the fuel system due to the increased danger of fire.

- Engine and exhaust system become very hot during operation and require cool-down time after machine is shut off. Avoid contact with hot parts. Wait for the machine to cool before touching components.
- Retainer pins can fly out or splinter when struck with force. Avoid striking the pins during operation, repair, or maintenance.
- Do not use starting fluid (for example, ether), especially in those cases in which a heater plug (intake air pre-heating) is used at the same time.

Preparing for maintenance and repair work

- Prior to carrying out repair and maintenance work, always attach a warning label such as “Repair work—do not start machine!” to the control elements as a precautionary measure.
- Observe the startup and shutdown procedures set forth in this Operator’s Manual. This applies to any work concerning the operation, conversion or adjustment of the machine and its safety-oriented devices, or any work related to inspection and maintenance.
- Prior to carrying out assembly work on the machine,stabilize the area under repair and use proper lifting and support devices to change parts wighing more than 9kg (20 lbs.).
- Carry out maintenance work ONLY if:
  - the machine is positioned on firm and level ground
  - secured against unintentional movement
  - all hydraulically movable attachments and working equipment have been lowered to the ground
  - the engine is stopped
  - the starting key has been removed
  - the pressure accumulator is discharged
- Carry out maintenance work beneath a raised machine, attachments or additional equipment ONLY if a safe and secure support has been provided. The use of hydraulic rams or jacks as the sole method of support does NOT sufficiently secure raised machines or equipment/attachments!

Performing maintenance and repairs

- Observe the adjustment, maintenance and inspection activities and intervals set forth in this Operator’s Manual, including information on the replacement of parts and partial equipment. These activities must be carried out only by qualified personnel.
- Disconnect the negative battery terminal when working on the electrical system.
- Do not allow the machine to be serviced, repaired, or test-driven by unauthorized staff.
- If maintenance with the engine running cannot be avoided, lower the dump bucket and apply the parking brake.
- Wear a safety harness when performing elevated maintenance work. Keep all handles, steps, handrails, platforms, landings, and ladders free from dirt, snow and ice.
- Always use specially designed or otherwise safety-oriented ladders and working platforms to carry out overhead assembly work. NEVER use machine parts or attachments/superstructures as a climbing aid!
- Do not use the work equipment as lifting platforms for persons.
- In accordance with this Operator’s Manual and instructions for the respective assembly, release the pressure in all system sections and pressure lines (hydraulic system) before carrying out any maintenance work.

2.10 Special Hazards

Battery

- In case of a frozen battery or of an insufficient electrolyte level, do not try starting the machine with battery jumper cables. The battery can burst or explode.
- Batteries contain caustic sulphuric acid. When handling the battery, observe the specific safety instructions and regulations relative to accident prevention.
- A volatile oxyhydrogen mixture forms in batteries during normal operation and especially when charging. Always wear gloves and eye protection when working with batteries.
- Starting the machine with a battery jumper cable can be dangerous if carried out improperly. Observe the safety instructions regarding the battery.

Tracks (Track dumpers)

- Repair work on the tracks must be carried out only by trained technical staff or by an authorized workshop.
- Damaged tracks reduce the machine's operational safety. Therefore, check the tracks regularly for cracks, cuts or other damage.
- Check rubber track tension at regular intervals.

Electric energy

- Use only original fuses with the specified current rating.
- In case of electrical system malfunctions, switch off the machine immediately, disconnect the battery (by using the battery master switch), and carry out troubleshooting procedures.
- When working with the machine, maintain a safe distance from overhead electric lines! If work must be carried out close to overhead lines, the equipment and attachments must be kept well away from them.
- If the machine comes into contact with a live wire:
  - Immediately drive the machine out of the danger area.
  - Warn others against approaching and touching the machine.
  - Do not leave the machine until the line that has been touched or damaged has been safely de-energized!
- Make sure that work on the electric system is carried out only by a technician with appropriate training, in accordance with applicable electrical engineering codes.
- Inspect and check the electrical equipment of the machine at regular intervals. Defects such as loose connections or scorched cables must be repaired immediately.
- Observe the operating voltage of the machine/attachments. The voltage must be compatible (12V) and confirm that an appropriate fuse or circuit breaker is incorporated in the system to prevent damage from malfunction and short circuits.
- Always remove the grounding strap from the battery when working on the electric system.

Hydraulics

- Check all lines, hoses, and threaded couplers and fittings regularly for leaks and obvious damage. Repair any damage and leaks immediately. Leaking oil can cause injury and fire!

Noise

- Close all doors and windows if practical during operation.
- Confirm that all sound insulating materials inside the engine compartment are in place and undamaged.
- Wear ear protection. This is especially important when performing hammer operations or working in enclosed areas.

MSDS

- When handling oil, grease, and other chemical substances such as battery electrolyte or hydraulic fluid, observe the product-related safety regulations (Material Safety Data Sheet: MSDS).

Tires (Wheel dumpers)

- Repair work on the tires must be carried out only by trained technical staff or by an authorized workshop.
- Defective tires reduce the machine's operational safety. Therefore, check the tires regularly for cracks, cuts or other damage.
- Check the tire pressure at regular intervals.

2.11 Safety Guidelines while using Internal Combustion Engines

WARNING

Internal combustion engines present special hazards during operation and fueling. Failure to follow the warnings and safety guidelines could result in severe injury or death.

☞ *Read and follow the warning instructions in the engine owner's manual and the safety guidelines below.*

Running the engine

When running the engine:

- Keep the area around muffler and exhaust pipe free of flammable materials.
- Check the fuel lines and the fuel tank for leaks and cracks before starting the engine. Do not run the machine if fuel leaks are present or the fuel lines are loose.

When running the engine:

- Engine exhaust CAN KILL YOU IN MINUTES. Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell. Never run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided.
- Do not smoke while operating the machine.
- Do not run the engine near open flames.
- Do not touch the engine or muffler while the engine is running or immediately after it has been turned off.
- Do not operate a machine when its fuel cap is loose or missing.
- Do not remove the radiator cap when the engine is running or hot. The radiator fluid is hot and under pressure, and may cause severe burns!

Fueling the engine

When fueling the engine:

- Clean up any spilled fuel immediately.
- Refill the fuel tank in a well-ventilated area.
- Replace the fuel tank cap after refueling.

When fueling the engine:

- Do not smoke.
- Do not refuel a hot or running engine.
- Do not refuel the engine near an open flame.

3 Operation

This chapter describes the controls, and contains information on the function and handling of the indicators and controls on the control stand.

The pages stated in the table refer to the description of the controls.

A combination of digits, or a combination of digits and letters (e.g. 40/**18** or 40/**A**) used for identifying the control elements, means:
fig. no. 40/control element no. 18 or position A in fig. no. 40

Figures carry no numbers if they are placed to the left of the text.

The symbols used in the description have the following meanings:

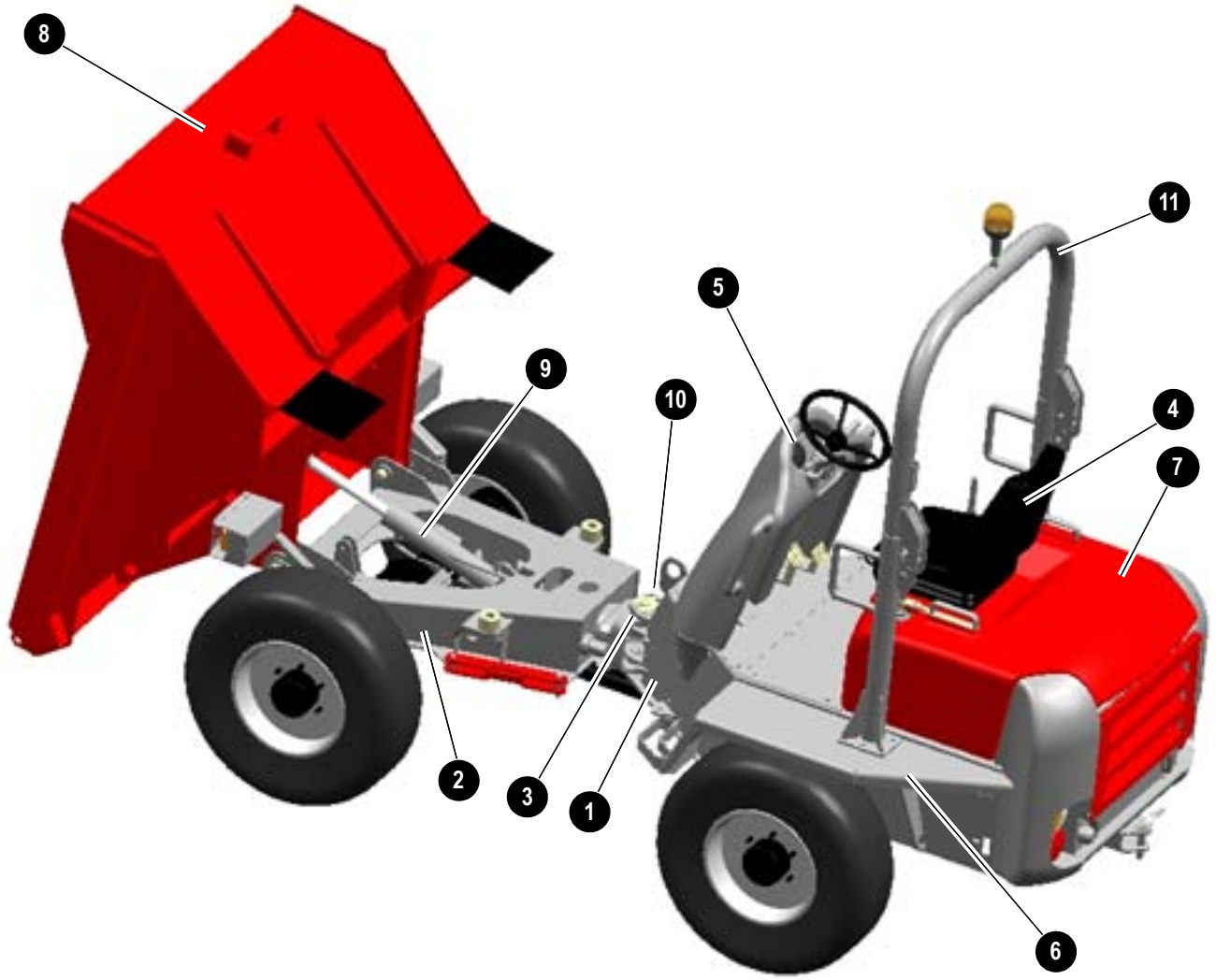
- This symbol stands for a list
  - Subdivision within lists or an activity. Follow the steps in the recommended sequence

☞ *This symbol requires you to perform the activity described*

➥ Description of the effects or results of an activity

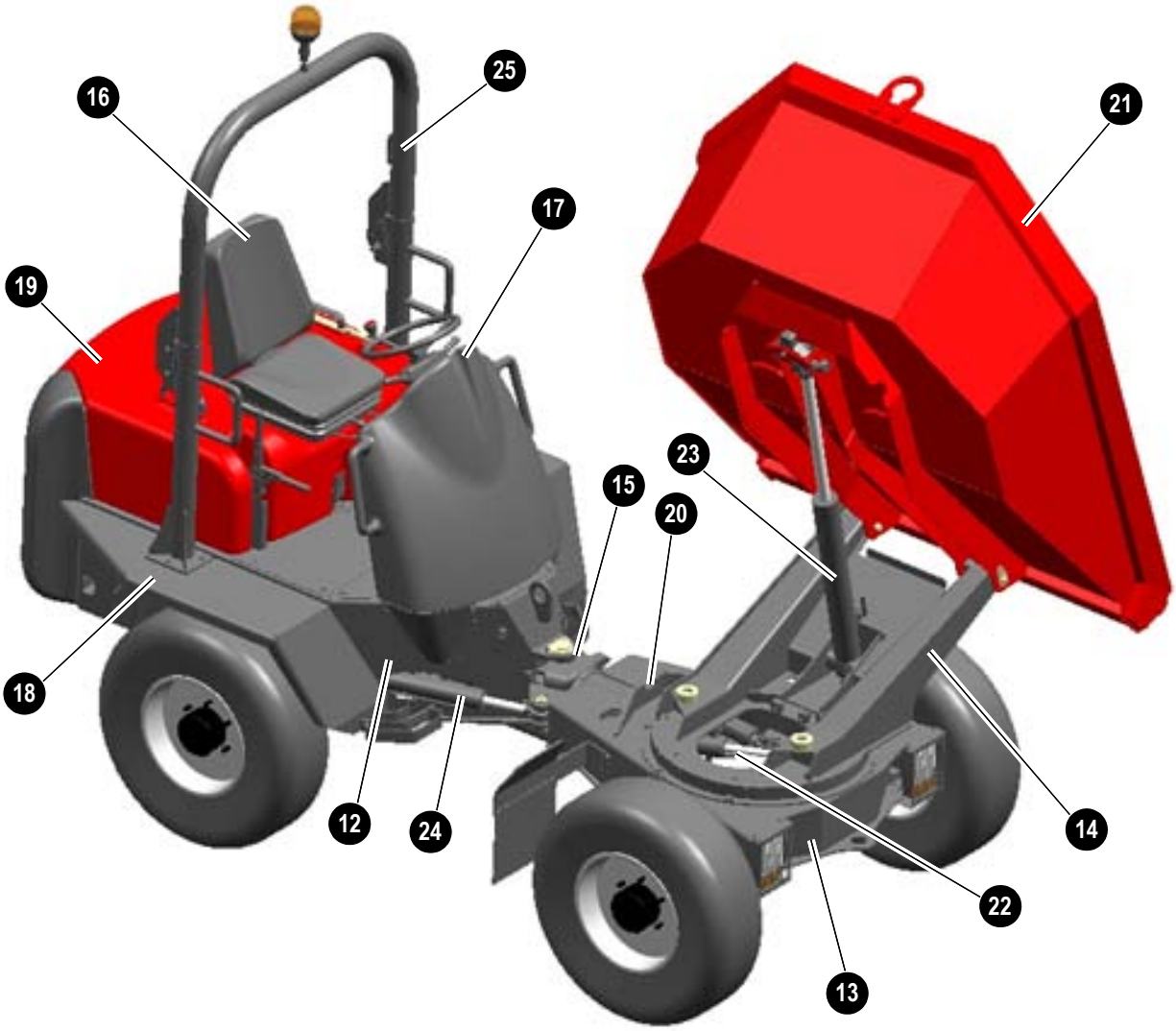
n. s. = not shown

Opt = option Stated whenever controls or other components of the machine are installed as an option.



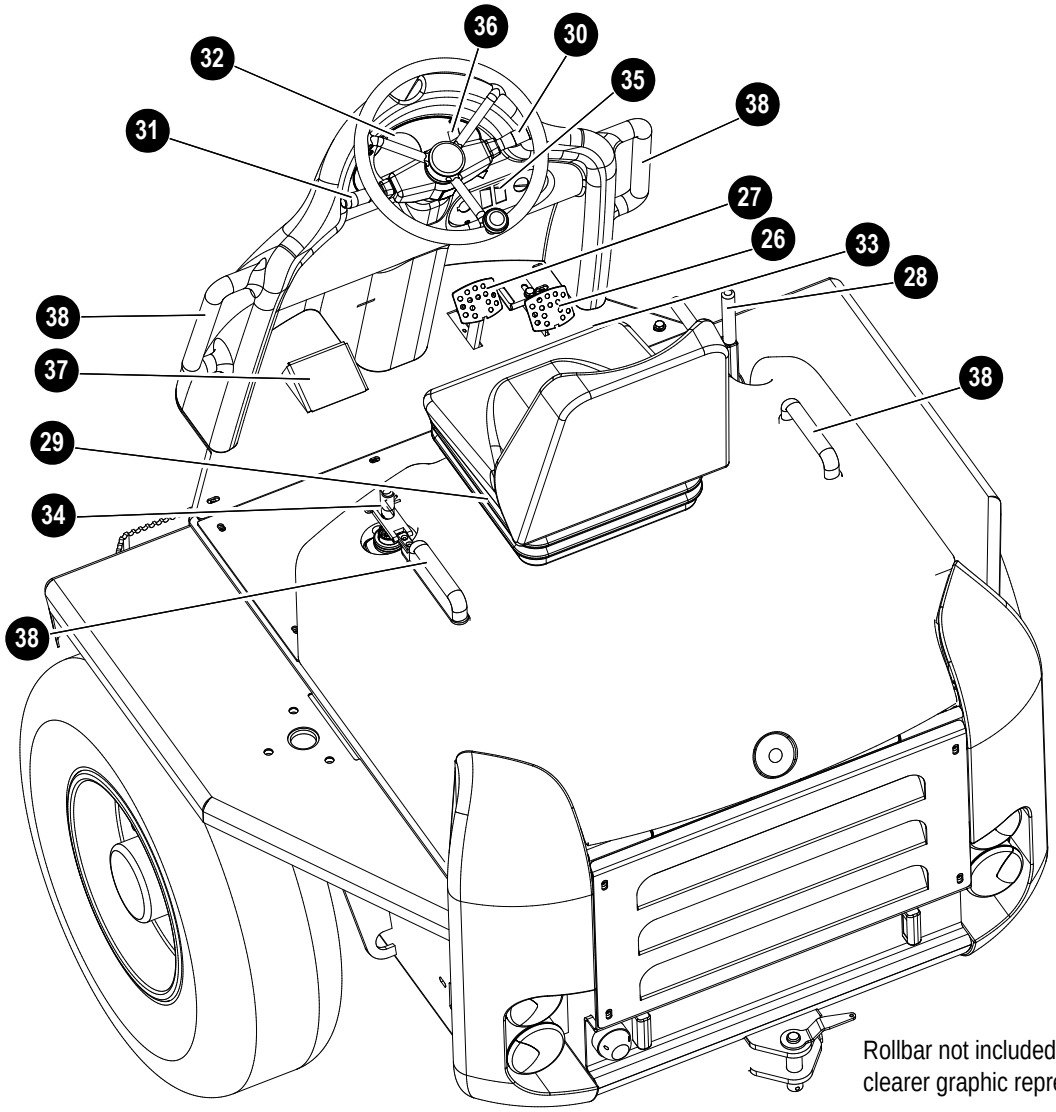
3.1 Description of 3001F components (overview)

Pos.	Description
1	Rear chassis
2	Front chassis
3	Articulated joint
4	Seat
5	Control stand
6	Mudguard
7	Engine cover
8	Dump bucket
9	Tilt ram
10	Steering ram
11	Rollbar



3.2 Description of 3001S components (overview)

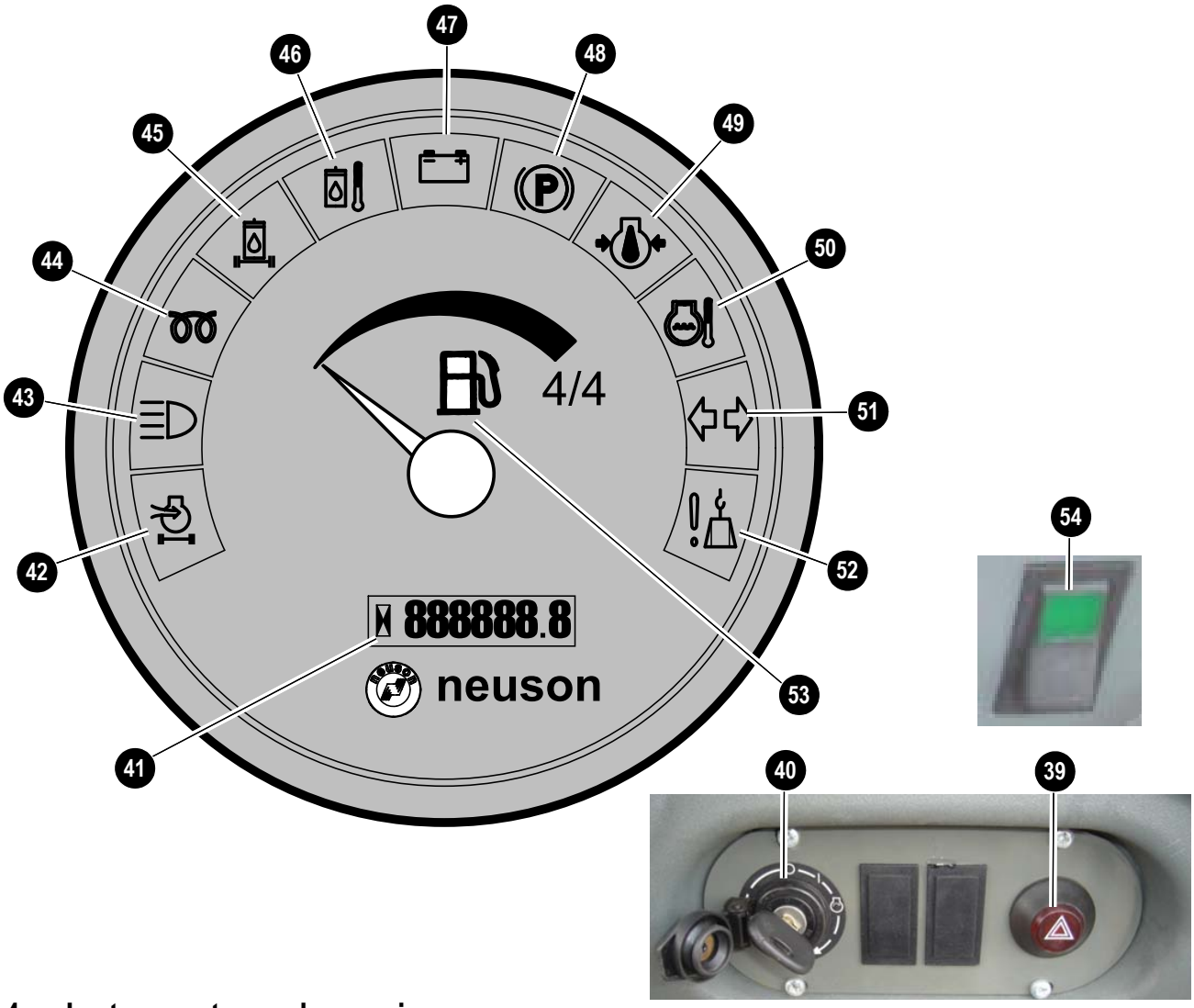
Pos.	Description
12	Rear chassis
13	Front chassis
14	Swivelling console
15	Articulated joint
16	Seat
17	Control stand
18	Mudguard
19	Engine cover
20	Swivel centring
21	Dump bucket
22	Offset ram
23	Tilt ram
24	Steering ram
25	Rollbar



Rollbar not included in this figure for a clearer graphic representation.

3.3 Control stand overview

Pos.	Description
26	Accelerator pedal
27	Service brake
28	Parking brake
29	Lever – backrest adjustment
30	Forwards-reverse control
31	Turn indicator lever – horn
32	Round display element
33	Lever for horizontal seat adjustment
34	Dump bucket control lever
35	Light switch
36	Low speed switch (turtle)
37	Footrest
38	Handle



3.4 Instrument panel overview

Pos.	Description
39	Hazard warning switch
40	Preheating start switch
41	Hour meter
42	Not assigned
43	High beam indicator (blue)
44	Preheating indicator (yellow)
45	Indicator (red) – hydraulic oil filter
46	Not assigned
47	Indicator (red) – alternator charge function
48	Parking brake indicator (red)
49	Indicator (red) – engine oil pressure
50	Indicator (red) – coolant temperature
51	Turn indicator indicator (green)
52	Not assigned
53	Fuel level indicator
54	Low speed switch (turtle)

3.5 Putting the machine into operation

Safety instructions

- Use footholds and handles **38** to access and leave the machine
- Never use control elements as handles
- Never get on or off a moving machine! Do not jump off the machine

Putting the machine into operation for the first time

Important information

- The machine may be put into operation by authorized staff only – *see chapter 2.5 Operator and Technician Qualifications and Basic Responsibilities* on page 2-3 and – *see chapter 2.9 Safety Guidelines for Maintenance* on page 2-7 of this Operator's Manual.
- The staff must have read and understood this Operator's Manual before putting the machine into operation.
- The machine may only be used in serviceable condition in accordance with its designated use and the instructions set forth in the Operator's Manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine.
- Go through the “Start-up” checklist in the following chapter.

Running-in period

Handle the machine carefully during its first 50 operating hours.

The future performance and service life of the machine are heavily dependent on the observance of the following recommendations during the running-in period.

- Do not overload the machine, but at the same time do not drive too cautiously either, as the machine will never reach its proper operating temperature.
- Do not run the engine at high rpm for extended periods.
- Increase the load gradually while varying the engine revs.
- Strictly observe the maintenance schedules in the appendix . – *see chapter 5.13 Maintenance plan (overview)* on page 5-33

Check lists

The checklists below are intended to assist you in checking and monitoring the machine before, during and after operation.

These checklists cannot claim to be exhaustive; they are merely intended as an aid for you in fulfilling your duties as a conscientious operator.

The checking and monitoring jobs listed below are described in greater detail in the following chapters.

If the answer to one of the following questions is NO, first rectify the cause of the fault before starting or continuing work.

Start-up checklist

Check the following points before putting the machine into operation or starting the engine:

No.	Question	✔
1	Enough fuel in the tank? (➠ *5-3*)	
2	Coolant level OK? (➠ *5-10*)	
3	Has water in the diesel prefilter been removed? (➠ *5-4*)	
4	Engine oil level OK? (➠ *5-7*)	
5	Oil level in hydraulic oil tank OK? (➠ *5-18*)	
7	V-belt condition and tension checked? (➠ *5-14*)	
8	Lubrication points greased? (➠ *5-36*)	
9	Have hydraulic hoses, connections and ram seals for leaks checked?	
10	Has position of battery terminals firmed?	
11	Tires checked for cracks, cuts etc. ? (➠ *5-23*)	
12	Footholds clean?	
13	Engine cover locked with the buckle? (➠ *3-21*)	
14	Especially after cleaning, maintenance or repair work: ➥ Rags, tools and other loose objects removed?	
15	Correct seat position? (➠ *3-19*)	
16	Rollbar raised?	
17	Seat belt fastened? (➠ *3-20*)	

Operation checklist

After starting the engine and during operation, check and observe the following points:

No.	Question	✔
1	Anyone dangerously close to the machine?	
2	Indicators for engine oil pressure and alternator charge function gone out? (➠ *3-10*)	
3	Temperature indicators for engine coolant do not come on? (➠ *3-10*)	
4	Accelerator and brake pedals working correctly? (➠ *3-15*)	

Parking checklist

Check and observe the following points when parking the machine:

No.	Question	✔
1	dump bucket lowered?	
2	Drive lever in neutral position?	
3	Parking brake applied?	
4	Starter key removed?	
When parking on public roads:		
5	Machine adequately secured?	
When parking on slopes:		
6	Machine additionally secured with chocks under the wheels to prevent it from rolling away?	

3.6 Driving the dumper

Preheating/start switch: overview

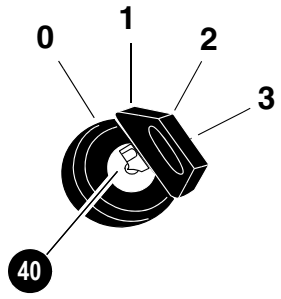


Fig. 1: Preheating/start switch

Position	Function	Power consumer
0	Insert or remove the starter key	None
1	ON/drive position	All functions are operational ➥ Indicators come on
2	Preheats the engine (10 – 15 seconds)	➥ Until the preheating indicator goes out
3	Starts the engine	➥ Starter is actuated ➥ Indicators must go out

Accelerator pedal: overview

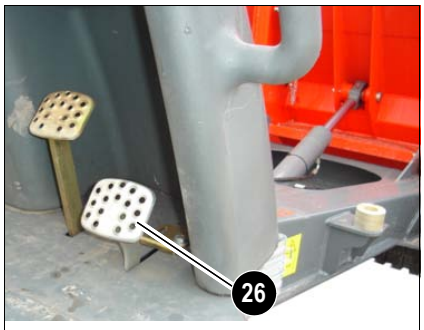


Fig. 2: Accelerator pedal

The accelerator pedal controls the engine speed as follows:

- Speed can be set with accelerator pedal **26**

☞ Press down the accelerator pedal:

➥ Engine speed rises

☞ Reduce the pressure on the accelerator pedal:

➥ Engine speed is reduced

Indicators and warning lights: overview

45 Indicator (red) – hydraulic oil filter

Indicates inadmissibly high pressure in the hydraulic return line to the tank. In this case:

☞ *Have the hydraulic oil return filter checked and, if necessary, replaced by an authorized workshop.*

☞ *The indicator can come on briefly if the hydraulic oil is cold, but goes out again once operating temperature is reached.*

47 Indicator (red) – alternator charge function

NOTICE: The coolant pump no longer runs if the V-belt is faulty. Engine may overheat or break down.

If the indicator light comes on with the engine running:

☞ *Stop the engine immediately.*

☞ *Have the cause repaired by an authorized service center.*

The V-belt or the charging circuit of the alternator is faulty if the indicator comes on with the engine running. The battery is no longer charged.

49 Indicator (red) – engine oil pressure

Comes on if the engine oil pressure is too low. In this case:

☞ *Stop the machine.*

☞ *Switch off the engine immediately and check the oil level.*

The indicator comes on when the ignition is turned on and goes out as soon as the engine runs.

50 Indicator (red) – coolant temperature

WARNING

Burn hazard. The engine coolant is under pressure at high temperature. Failure to observe specific instructions to check the coolant level in the radiator of the cooling system can cause serious injury from burns or pressure spray of the coolant.

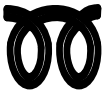
☞ *Do not attempt to remove the radiator filler cap or drain the radiator coolant until the coolant temperature is less than 43°C (110°F).*

☞ *Stop the engine and wait at least 10 minutes or until the cap is comfortable to the touch before attempting removal.*

☞ *Wear protective gloves and eye protection.*

☞ *After determining the temperature is low enough to avoid burns, slowly turn the cap counterclockwise to the first notch stopping cap rotation. Wait to confirm that any pressure has been relieved. Depress the cap and continue to rotate the cap in a counterclockwise motion until the cap is free and can be removed.*

44 Preheating indicator (yellow)



Comes on if the key in the preheating/start switch is in position 2.

A glow plug preheats the air in the combustion chamber of the engine when the key is in this position.

The indicator goes out as soon as preheating temperature is reached (15 – 20 sec)

52 Not assigned

48 Parking brake indicator (red)

Comes on if the parking brake is applied.
In this case:
☞ *Actuate lever **28** to release the parking brake*

43 High beam indicator (blue)

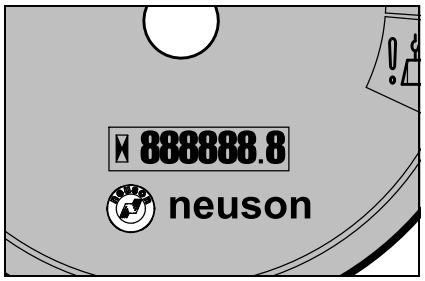
Comes on if high beam is on.

CAUTION

Make sure no other road users are blinded by lights.
☞ *Switch on low beam when other road users are nearby.*

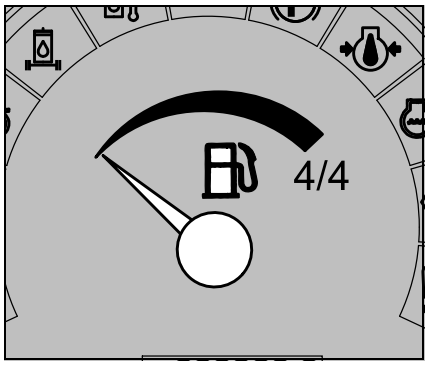
51 Turn indicator indicator (green)

Flashes if the turn indicator is switched on.



41 Hour meter

Counts the machine service hours when the engine is running.



53 Fuel level indicator

Refuel immediately if the fuel level indicator reaches minimum. Otherwise the fuel system must be bled if it is run dry.

Before starting the engine

☞ *Adjust your seat position – see Seat adjustment on page 3-19*

Important

All controls must be within easy reach. You must be able to press the accelerator and brake pedals to their limit positions!

☞ *Fasten your seat belt – see Seat belt on page 3-20*

- Do not fasten your seat belt if the rollbar is not raised!

☞ *Check whether all levers and pedals are in neutral position.*

☞ *Press the accelerator pedal to the center position (between minimum and maximum) if the engine is cold.*

Starting the engine: general

- The starter cannot be actuated if:
  - the engine is already running (start repeat interlock).
  - the drive lever is not in neutral position,
  - the parking brake is not applied.
- Do not run the starter for more than 10 seconds.
- Wait about 1 minute so the battery can recover before trying again.

Procedure

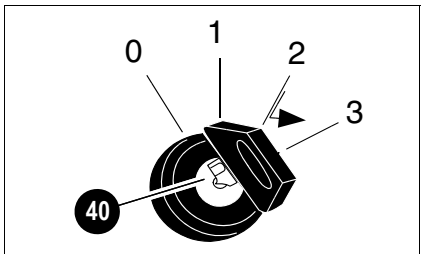


Fig. 3: Preheating start switch

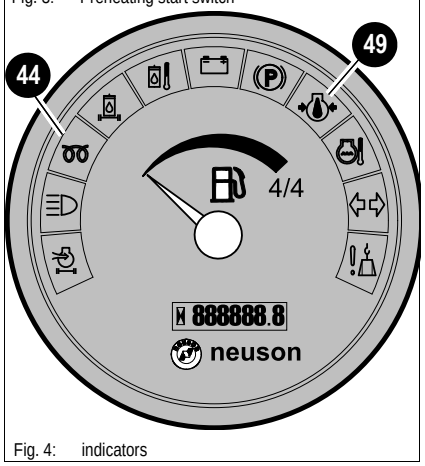


Fig. 4: indicators

After you have completed the starting preparations:

☞ *Insert the starter key into the preheating/start switch **40***

☞ *Turn the starter key to position "1"*

☞ *Check whether the following indicators come on:*

➥ Indicator **49** for engine oil pressure.

➥ Indicator **44** for alternator charge function.

☞ *Replace defective indicators immediately.*

☞ *Turn the starter key to position "2" and hold it in this position until the preheating* indicator *goes out.*

☞ *Turn the starter key to position "3" and hold it in this position until the engine starts.*

➥ If the engine does not start after 10 seconds.

☞ Interrupt the start procedure and try again after 1 minute.

➥ If the engine still does not start after the second try.

☞ Contact a Wacker Neuson service center for troubleshooting.

➥ As soon as the engine starts:

☞ *Release the starter key.*

When the engine runs smoothly (increased engine speed):

Important

In general, a battery delivers less energy in cold conditions. Therefore make sure the battery is always well charged.

When the engine has started ...

☞ *Check whether all indicators have gone out:*

☞ *Let the engine warm up.*

At cold temperatures:

☞ *Increase the engine rpm slowly.*

☞ *Do not run the engine at full load until it has reached its operating temperature.*

Engine warm-up

Once it has started, let the engine warm up at slightly increased idling rpm. Run the engine without load during the warm-up phase (drive lever in neutral position). During the warm-up phase, check for unusual noise, exhaust color, leaks, malfunctions or damage. In case of malfunctions, damage or leaks, park and secure the machine, and find out the cause for the damage and have it repaired.

Jump-starting the engine (supply battery)

Safety instructions

WARNING

Explosion hazard. A frozen battery may explode during a jump-starting operation.

☞ *Do not jump-start the engine if the battery is frozen.*

☞ *Dispose of the frozen battery in accordance with local environmental regulations.*

☞ *Replace the battery.*

CAUTION

Possibility of equipment damage or injury from improper jump-starting.

☞ *Make sure the jumper cables are rated for 12V and the maximum CCA rating of the battery.*

☞ *The cable clamping ends shall be colored red for positive post connectors, and black for the negative post connectors.*

☞ *To avoid sparking, the excavator must not touch the jump-starting vehicle when connected with jumper cables.*

☞ *Use a 12V source, either in the form of another battery or a charger equipped for jump starting. Using higher or lower voltage sources can damage the electrical system and potentially cause injury.*

☞ *To avoid short circuits, the jumper cable connected to the positive* **+** *terminal of the starting battery must never be brought into contact with electrically conductive vehicle parts.*

☞ *Route the jumper cables so they do not become entangled in rotating components in the engine compartment.*

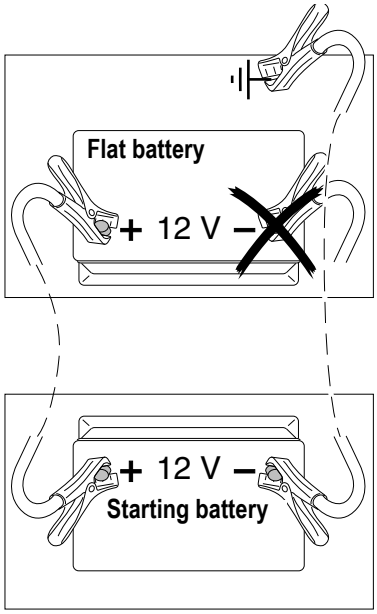


Fig. 5: Starting aid with jump leads

Procedure

☞ *Drive the jump-starting vehicle close enough to the machine so that the jump leads can reach to connect the two batteries.*

☞ *Let the engine of the jump-starting vehicle run.*

☞ *First connect one end of the red jump lead (+) to the + terminal of the flat battery, then connect the other end to the + terminal of the starting battery.*

☞ *Connect one end of the black jump lead (–) to the – terminal of the starting battery.*

☞ *Connect the other end of the black jump lead (–) onto a solid metal component fimly mounted on the engine block or onto the engine block itself. Do not connect it to the negative terminal of the flat battery, as otherwise explosive gas emerging from the battery can ignite if sparks are formed!*

☞ *Start the engine of the machine with the flat battery.*

Once the engine has started:

☞ *With the engine running, disconnect both jump leads in exactly the reverse order (first remove the – terminal, then the + terminal) – this prevents sparking in the vicinity of the battery!*

Special instructions for traveling on public roads

The machine is subject to the:

- Applicable legal regulations of your country

Also observe the applicable regulations for accident prevention of your country.

Travel operation

Important

Before pressing accelerator pedal **26**:

☞ *Verify that the machine is in the proper gear (forward or reverse).*

☞ *Make sure that the surrounding area is clear.*

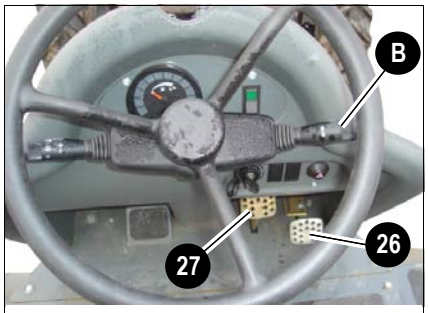


Fig. 6: Machine movement controls

- The travel direction is selected by using the drive lever **B.**

☞ *Select the required travel direction forward or reverse.*

☞ *Start machine travel by pressing accelerator pedal **26.***

➥ Set the travel speed with accelerator pedal ***26.*** When accelerating, accelerate slowly.

NOTICE: Possible transmission damage. Do not change the driving direction while the machine is moving. Bring the machine to a complete stop before changing the driving direction.

- To change travel direction:

☞ *Stop the machine by releasing the accelerator and pressing the brake pedal **27***

☞ *Select the opposite travel direction with the drive lever.*

☞ *Start machine travel by pressing accelerator pedal **26.***

Accelerator pedal

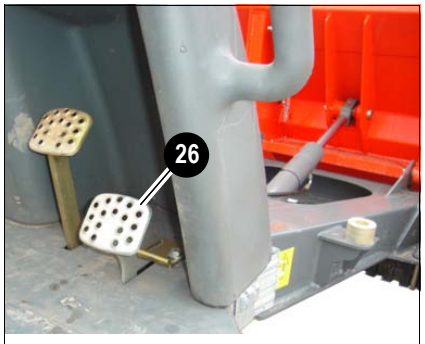


Fig. 7: Accelerator pedal

Accelerator pedal ***26*** sets the engine speed. During travel operation, the machine accelerates as the engine speed increases. During dump bucket operation, the dump bucket dumps in or out more rapidly as engine speed is increased.

Function	
Press the pedal	Engine speed rises
Reduce the pressure on the pedal	Engine speed is reduced
Release the pedal	Idling speed

The forward or reverse drive speed depends on the position of accelerator pedal.

Hydraulic brake

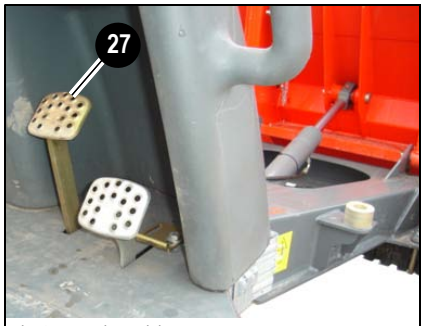


Fig. 8: Brake pedal

Hydrostatic drive.

Hydraulic service brake 27 with fully enclosed wet multdisc brakes in the front axle, self-adjusting, braking effect on all four wheels.

Important

Use service brake ***27*** on slopes to slow down the machine as required.

Mechanical brake

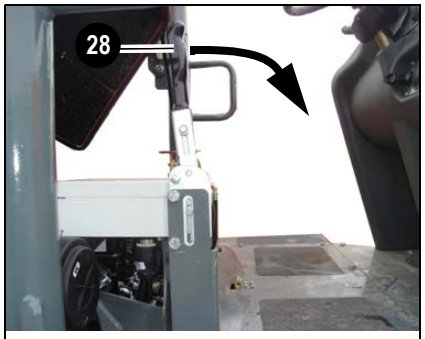


Fig. 9: Parking brake

Parking brake with mechanical braking effect on the front axle.

Press parking brake lever ***28*** to release the parking brake.

Important

Hitting parking brake lever ***28*** with your hand to release the parking brake can damage the lever!

Pull up lever ***28*** to apply the parking brake.

3.7 Low/high speed

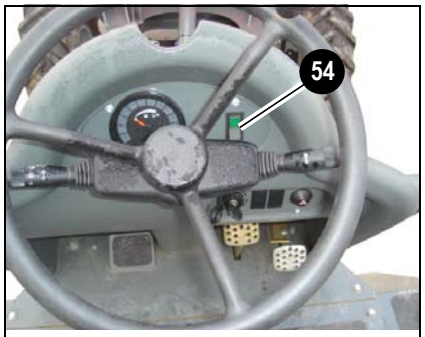


Fig. 10: Low/high speed

Use switch ***54*** to switch over between low and high speed.

The green indicator (turtle) in the switch comes on if low speed is enabled.

The green indicator in the switch goes out if high speed is enabled.

3.8 Hazard warning system

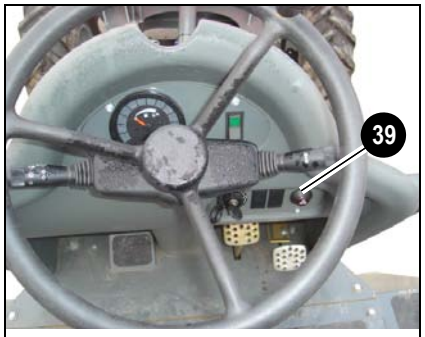


Fig. 11: Hazard warning system

Pressing switch **39** switches the hazard warning system on and off.

3.9 Driving on slopes

Follow these safety instructions carefully when driving on slopes, in order to avoid accidents.

Specific safety instructions

☞ *Lower the dump bucket when driving the machine.*

☞ *Also drive in low speed on slopes!*

☞ *When operating the machine, make sure you can stop safely if the machine starts to skid or if it becomes unstable.*

☞ *Avoid swiveling the dump bucket when traveling on slopes, otherwise the machine can lose its dump bucket balance and tip over.*

➥ When operating on a slope, only dump the dump bucket when the machine is facing uphill.

☞ *Do not drive across slopes steeper than 25 %, otherwise the machine can tip over laterally.*

☞ *Always drive straight ahead when driving uphill or downhill. Driving diagonally or at an angle to the slope is very dangerous.*

Driving on slopes with a loaded dump bucket

Proceed as follows to prevent the machine from tipping over or slipping sideways:

☞ *When driving on slopes (> 25 %) with a loaded dump bucket, the dump bucket must always face uphill since the heavier part of the machine – in this case the load in the dump bucket – must face uphill to prevent the machine from tipping over.*

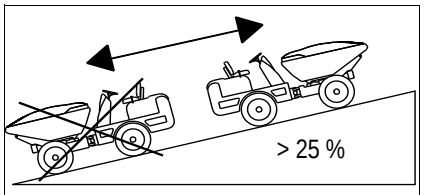


Fig. 12: Driving on slopes with a loaded dump bucket

Driving on slopes with an empty dump bucket

☞ *When driving on slopes (> 25 %) with an empty dump bucket, the dump bucket must always face downhill since the heavier part of the machine – in this case the engine – must face uphill to prevent the machine from tipping over.*

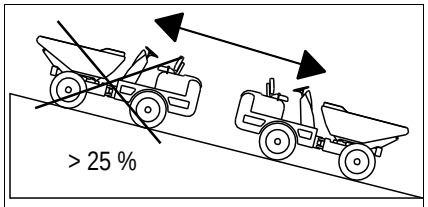


Fig. 13: Driving on slopes with an empty dump bucket

Driving across slopes

☞ *Do not drive across slopes with lateral inclinations steeper than 25 %!*

☞ *When driving across slopes with lateral inclinations up to 25 %, dump out the dump bucket only uphill for reasons of safety.*

WARNING

Tip-over hazard. Soft or uneven ground may affect machine stability while driving across slopes.

☞ *Pay special attention to the ground conditions while driving across slopes.*

☞ *Drive across slopes with inclinations up to 25 % only when the ground is firm.*

Parking the machine

Fig. 14: Neutral

CAUTION

Possibility of inadvertent machine movement. To avoid unintentional movement of the machine once it has been parked:

☞ *Park the machine on level, stable ground.*

☞ *Stop the machine.*

☞ *Move drive lever **A** to neutral position.*

☞ *Lower the dump bucket.*

☞ *Apply the parking brake.*

☞ *Switch off the engine.*

☞ *If parking the machine on a slope cannot be avoided, place wheel chocks under the wheels to make sure the machine will not roll away under its own weight.*

NOTICE: Never switch off the engine under full load, otherwise it can be damaged due to overheating. Let the engine briefly run at idling speed with no load before you switch it off.

Important

Secure the machine against unauthorized operation.

- Remove the key.

Loading the machine

WARNING

Crushing hazard.

☞ *Stay clear of the machine as it is being loaded.*

NOTICE: Incorrect loading causes severe damage to the machine.

☞ *Make sure the payload is not exceeded.*

☞ *Make sure the operator's visibility is not impaired.*

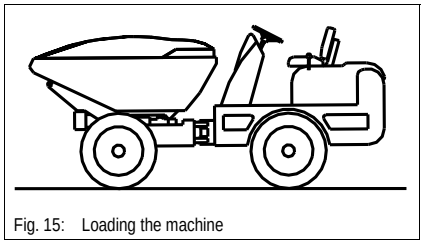


Fig. 15: Loading the machine

- Before loading:

☞ *Select the neutral position with the drive lever.*

☞ *Lower the dump bucket.*

☞ *Apply the parking brake.*

☞ *Stay clear of the control stand and of the danger area for reasons of safety.*

- Once loading is over:

☞ *Remove dirt, debris, dust etc. from the control elements.*

☞ *Remove loose material.*

3.10 Seat adjustment

CAUTION

Possible loss of machine control while adjusting the seat.

☞ *Never change the seat position during machine operation or travel.*

☞ *Adjust the seat before operating the machine.*

☞ *– see Before starting the engine on page 3-12.*

Weight adjustment

Important

Adjust the seat suspension correctly to ensure a high level of ride comfort.

Fig. 16: Weight adjustment

To adjust to a higher weight:

☞ *Turn the adjusting wheel to the right.*

To adjust to a lower weight:

☞ *Turn the adjusting wheel to the left.*

The specified weight is indicated by the yellow pointer next to the adjusting wheel.

Horizontal adjustment

Fig. 17: Horizontal seat adjustment

☞ *Sit down on the seat.*

☞ *Pull lever 33 upwards and at the same time.*

☞ *Move the seat forwards or backwards.*

Backrest adjustment

Fig. 18: Backrest adjustment

☞ *Pull lever* **29** *up and at the same time press against the backrest to move it to the required position.*

☞ *Let lever* **29** *lock into place.*

3.11 Seat belt

WARNING

Personal injury hazard. The seat belt provides positive support in the operator seat during operation and travel and keeps the operator located within the comfort zone for control operation. The seat belt also reduces the risk of injury in the event a tipping incident occurs during use.

☞ *Always buckle up before moving or working with the machine.*

☞ *Seat belt must not be twisted.*

☞ *Seat belt must run over the hips – not over the stomach – and must always be applied tightly.*

☞ *Do not place the seat belt over hard, edged or fragile items (tools, meter rule, glasses, pen) carried inside your clothes.*

☞ *Never buckle up 2 persons with one seat belt.*

☞ *Never operate the machine with the ROPS in the folded position.*

☞ *Check seat belts each time the operator uses the machine. Have damaged parts immediately replaced by an authorized workshop before using the machine.*

☞ *Always keep the seat belt and buckle clean, as dirt and debris can cause the buckle to malfunction and accelerate internal webbing abrasion in the belt.*

☞ *Seat belt buckle must not be obstructed by foreign bodies (paper or similar); otherwise the buckle latch cannot lock into place!*

WARNING

Personal injury hazard. The seat belt strap will be stretched after an accident and is no longer serviceable.The seat belt will NOT provide adequate protection in the future!

☞ *Replace the seat belt after an accident.*

☞ *Have fastening points and seat fixture examined for damage or failure. Repair or replace if damaged.*

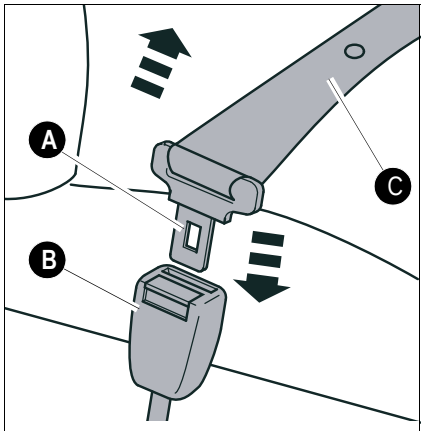


Fig. 19: Fastening the seat belt

Seat belt **C** is for the driver's safety during work on construction sites and during road travel.

Fastening the seat belt:

☞ *Fasten seat belt C as follows before operating the machine:*

- Hold belt on buckle latch **A** and run it slowly and steadily over the hips to buckle **B.**
- Insert buckle latch **A** into buckle **B** with an audible click **(pull test).**

Important

Fasten the seat belt only if the rollbar is raised.

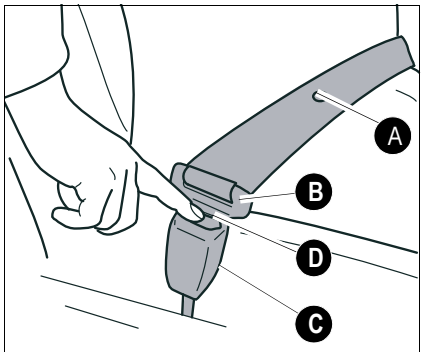


Fig. 20: Unfastening the seat belt

Unfastening the seat belt:

☞ *Unfasten seat belt A as follows:*

- Hold the seat belt.
- Press red button **D** on buckle **C.**

  ➥Latch **B** is released from buckle **C** by spring pressure.
- Slowly return the seat belt to the retractor.

Engine cover

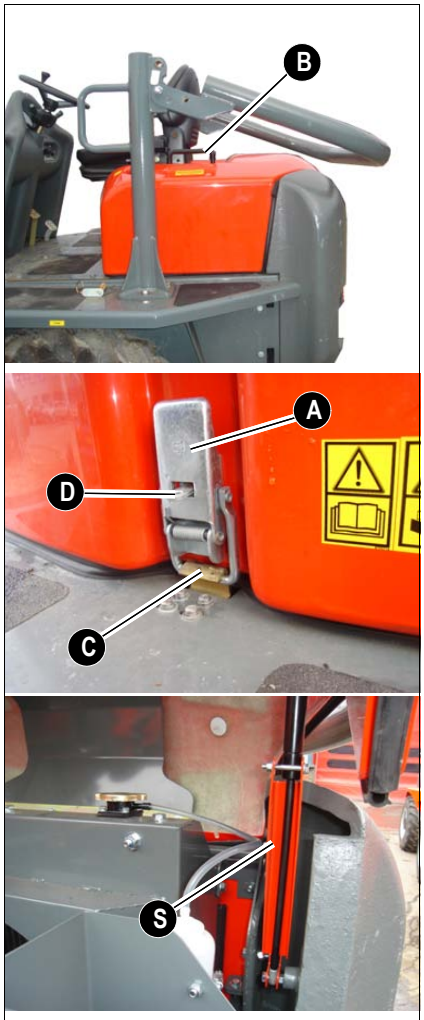


Fig. 21: Engine cover lock

Opening:

☞ *Stop the machine.*

☞ *Let the engine cool down.*

☞ *Press buckle **A** of the engine cover downwards and pull shackle **C** to the front.*

☞ *Pull the engine cover upwards with handles **B** until the red safety prop **S** locks into place.*

Closing:

☞ *Press safety prop **S** to the rear*

☞ *Press down the engine cover*

☞ *Press buckle **A** forwards and hitch shackle **C** into the hook at the same time*

☞ *Press lock **A** to the rear*

Locking and unlocking:

The engine cover can be locked with an external lock in eyelet **D**

Important

Do not lock the engine cover during machine operation!
The emergency switch is located underneath the engine cover!

3.12 Working with the machine

General safety instructions

- Avoid traveling near the edge of an excavation.
- Do not drive underneath projecting earth. Stones or the projecting earth can fall onto the machine.
- When working on roofs or similar structures, check the resistance and the structure itself before starting work. The building can collapse, causing severe injury and damage.
- Do not place the machine directly underneath the workplace during demolition, otherwise demolished parts can fall onto the machine or the building can collapse, causing severe injury or damage.
- Operation of the machine by unqualified operators is prohibited!
- The hydraulic system of the machine is still pressurised even when the engine is not running! Release the pressure in the sections of the system and hydraulic lines which are to be opened before starting setup or repair work.
- Before dumping out the dump bucket next to an excavation, secure the machine with suitable wheel chocks or other auxiliary means.
- Always watch the material as you dump out the dump bucket: make sure the material is dumped out evenly and does not remain stuck in the dump bucket, otherwise the machine could tip over
- Do not dump the load when working on sloping ground.
- No transporting of persons, animals etc. in the dump bucket.
- Always make precise and smooth control movements, not abrupt movements.
- Do not get on or off the machine when it is moving.
- Avoid dangerous work conditions on the work site, do not work in severe weather and make sure no-one is at risk.
- Always fasten your seat belt when working with machines with rollover protection structures.

3.13 Dumper 3001 front dump bucket operation

Important

Do not drive the machine with a raised dump bucket.

☞ *Make sure the dump bucket is completely lowered before driving the machine.*

The working speed of the dump bucket is set with the bucket control lever and the accelerator pedal.

NOTICE: Lowering the dump body too rapidly and knocking it against the chassis can cause machine damage

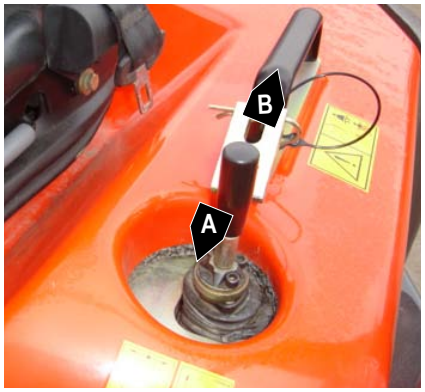
WARNING

Crush hazard. Lowering the dump bucket rapidly can cause the machine to tip over.

☞ *Do not lower the dump bucket rapidly.*

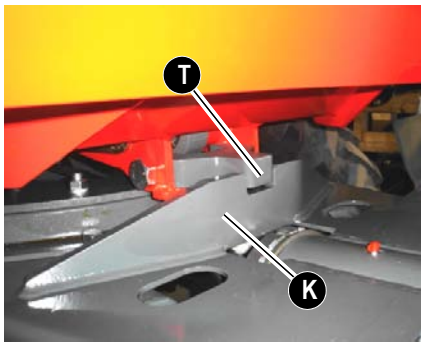
When dumping into a pit:

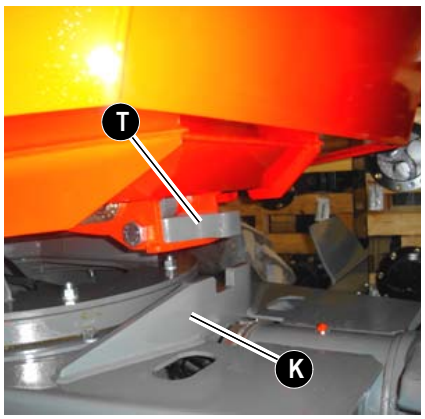
- Always be certain the ground around the pit can support the weight of the machine and the load.
- Always place the forward-reverse control in the neutral position.
- Always use a secondary means of braking such as a beam to chock the front wheels.

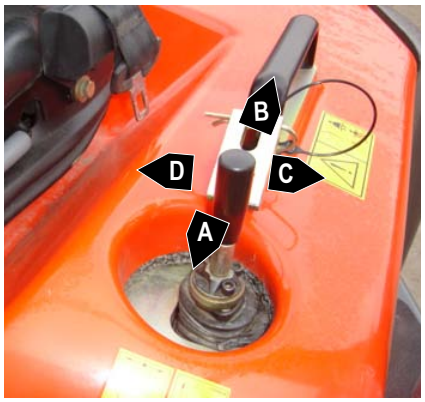


Position	Lever	Function
A	☞ *Lever pushed forwards*	➥ Dumping out the dump bucket
B	☞ *Lever pulled backwards*	➥ Lower the dump bucket

3.14 Dumper 3001 swivel dump bucket operation







Important

Do not drive the machine with a raised dump bucket.

☞ *Make sure the dump bucket is completely lowered before driving the machine.*

The working speed of the dump bucket is set with the bucket control lever and the accelerator pedal.
Material that sticks in the dump bucket, shall be dumped out only to the front in the straight-ahead position of the dumper.

NOTICE: Lowering the dump body too rapidly and knocking it against the chassis can cause machine damage .

WARNING

Crush hazard. Lowering the dump bucket rapidly can cause the machine to tip over.

☞ *Do not lower the dump bucket rapidly.*

When dumping into a pit:

- Always be certain the ground around the pit can support the weight of the machine and the load.
- Always place the forward-reverse control in the neutral position.
- Always use a secondary means of braking such as a beam to chock the front wheels.

Position	Lever	Function
A	☞ *Lever forwards*	➥ Dumping out the dump bucket
B	☞ *Lever pulled backwards*	➥ Lower the dump bucket
C	☞ *Lever to the left*	➥ dump bucket swivels to the left
D	☞ *Lever to the right*	➥ dump bucket swivels to the right

Swiveling the dump bucket:

Before swiveling the dump bucket, press the lever forwards to raise it until lock cog **T** is raised from lock recess **K**.

The dump bucket can then be swiveled.

Normal position of the dump bucket is the position in which the dump bucket is in center position and in which lock cog **T** engages in lock recess **K**.

3.15 Rollbar

Fig. 22: Rollbar

CAUTION

Personal injury hazard. The rollbar is very heavy and should not be raised or lowered by one person.

☞ *Two persons are required for raising or lowering the rollbar.*

Important

Fasten the seat belt only if the rollbar is raised.

Raising the rollbar:

☞ *Place the machine on level ground.*

☞ *Raise the rollbar with the help of a second person.*

☞ *Fasten the rollbar with lock pins **A** and secure these pins with split pins.*

Lowering the rollbar:

☞ *Place the machine on level ground.*

☞ *Remove the split pins from lock pins **A.***

☞ *Remove lock pins **A.***

☞ *Slowly and carefully lower the rollbar with the help of a second person.*

3.16 Towing

NOTICE: Improper towing can damage the machine.

☞ *The dumper is equipped with towing gear at the rear and a towing lug at the front. Only this equipment may be used for towing.*

☞ *Open the high-pressure circuit before towing the machine.*

Opening the high-pressure circuit

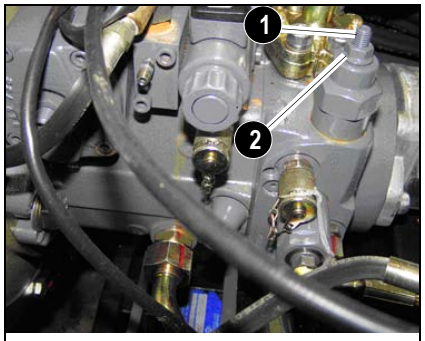


Fig. 23: Opening the high-pressure circuit

There are two HP pressure limiting valves on the pump under the floor panel, one on the upper left and the other on lower left.

Proceed as follows:

☞ *Slacken locknut w/f 14 (part 2) and unscrew it to the end of the screw.*

☞ *Screw in the screw with allen key w/f 4 (part 1) until you can feel a firmer resistance.*

☞ *Then screw in a further half revolution.*

NOTICE: Tightening the screw any farther will damage the valve.

☞ *Retighten the locknut.*

☞ *You can now slowly tow the machine (max. 1 km/h-0.62 mph) over a short distance (max. 1 km/h-0.62 mph).*

☞ *Then put the valves back into operation again! Proceed in the reverse order to do this (unscrew the screw as far as it will go).*

3.17 Articulated steering locking bar

WARNING

Personal injury hazard. An unlocked articulated joint can cause unexpected machine movement while the machine is being lifted.

☞ *Secure the steering ram with the articulated steering locking bar when lifting the machine by the lift points.*

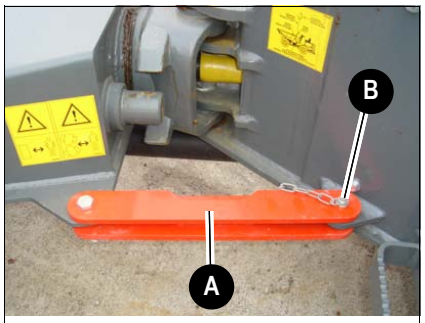


Fig. 24: articulated steering locking bar

The articulated steering locking bar connects the front and rear chassis to prevent steering movements (via the articulated joint) when lifting the dumper.

Procedure to follow:

☞ *Remove the spring plug from pin **B.***

☞ *Turn articulated steering locking bar **A** towards the rear chassis.*

☞ *Secure articulated steering locking bar **A** with the spring plug and pin **B.***

Important

Before putting the machine into operation again, mount the articulated steering locking bar back onto the front chassis again by means of pin **B**.

3.18 Locking the control levers

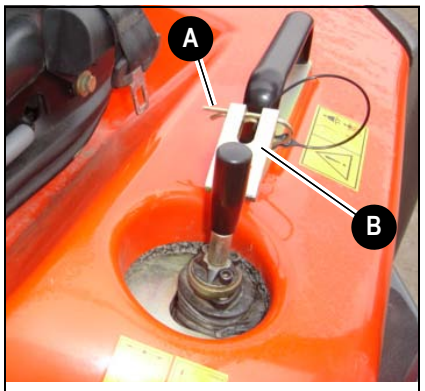


Fig. 25: Locking the control levers

CAUTION

Personal injury hazard. An unlocked control lever may cause unintentional actuation of the dump bucket.

☞ *Lock the control lever for the dump bucket while traveling.*

Lock as follows:

☞ *Remove split pin **A** from bracket **B.***

☞ *Fold bracket **B** to the front.*

☞ *Insert split pin **A** in bracket **B.***

Unlock in the reverse order!

3.19 Lifting the machine

Safety instructions

- The crane and the lifting gear must have suitable dimensions.
- Crane handling the machine requires suitable lifting gear.
- Secure the machine against unintentional movement!

WARNING

Crushing hazard.

☞ Do not lift the machine with someone in the operator seat/station or on the machine.

☞ Secure the machine against unintentional movement.

☞ Persons responsible for attaching the lifting devices to the machine shall be experienced with crane operations and hand signals.The crane operator shall maintain sight of the personnel attaching, guiding, and unhooking the dumper.

☞ Use OSHA-rated and approved lifting devices capable of lifting the dumper, attachments, options and accumulated debris. Refer to the general weight guidelines in the specification section of this manual.

☞ Do not lift the machine with material in the dump bucket.

☞ The crane operator shall observe the lift zone and lift the machine when the area is clear of people.

☞ Do not attempt to lift the dumper with any type of crane including wheel loaders unless the crane operator is qualified to lift loads in craning operations.

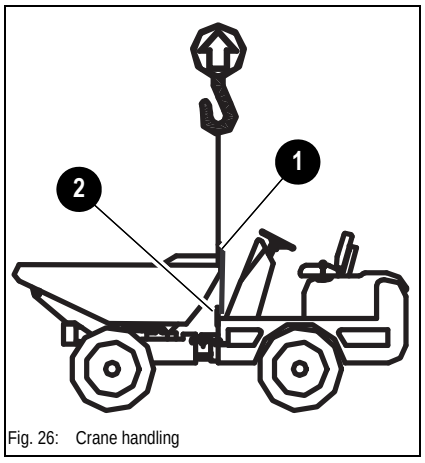


Fig. 26: Crane handling

☞ *Load the machine as follows:*

- Empty the dump bucket
- Lower the dump bucket
- Stop and park the machine
- Lock the control levers – *see chapter 3.18 Locking the control levers* on page 3-27
- The rollbar can be lowered to reduce the transport height.
- Put the articulated steering locking bar in place
- Use suitable lifting gear, tracks etc.

☞ Make the lifting gear pass through bracket **1** on the edge of the dump bucket and fasten it on eye hook **2** on the chassis!

- Slowly raise the machine

Loading and transporting the machine

Safety instructions

- The transport vehicle must be of adequate size – refer to *Chapter 6 "Specifications"* for the machine's dimensions and weights!
- Remove any mud, snow or ice from the tires so that the machine can be safely driven onto the ramps.
- Secure the machine against unintentional movement.
  – *see Parking the machine* on page 3-18!

Important

Possibility of injury or equipment damage from improper loading and transporting.

☞ *Read the safety instructions at the beginning of this chapter and follow any other local safety regulations regarding loading and transporting the machine.*

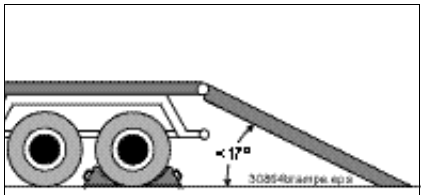


Fig. 27: Access ramps

☞ *Load as follows:*

- Secure the transport vehicle with chocks to prevent it from rolling.
- Place the access ramps at the smallest possible angle. Make sure the grade does not exceed 17° (30%). Use access ramps with an antiskid surface only.
- Make sure the loading area is clear and access to it is not obstructed – e.g., by superstructures.
- Make sure the ramps and the tyres of the dumper are free of oil, grease and ice.
- Start the engine of the dumper.
- Lower the dump bucket of the dumper.
- Carefully reverse the dumper onto the middle of the transport vehicle.
- Stop and park the machine.

Important

The manufacturer's warranty shall not apply to accidents or damage caused by loading or transporting the dumper.

Strapping down the machine

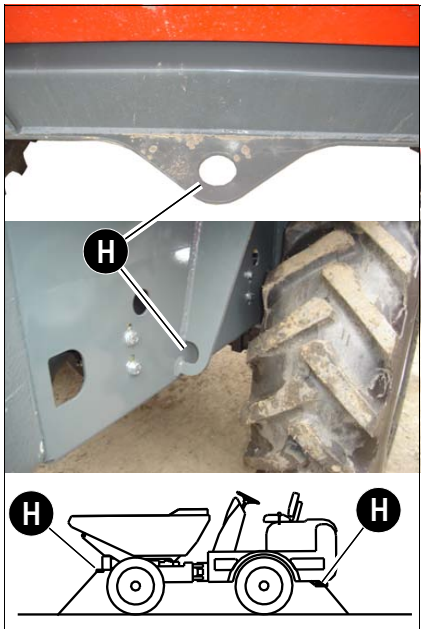


Fig. 28: Strapping down the machine

Important

The machine must be loaded and transported properly –

☞ *It is essential that you read the safety instructions at the beginning of this chapter and follow any other safety instructions relevant in your country!*

- Secure the wheels of the dumper at the front, rear and at the sides.
- Firmly strap down the dumper at the eye hooks **H** onto the platform, with belts or chainsof adequate size.
- Make sure the driver of the transport vehicle knows the overall height, width and weight of his vehicle (including the dumper) before transporting, and the legal transport regulations of the country or countries in which transport will take place!

3.20 Battery master switch

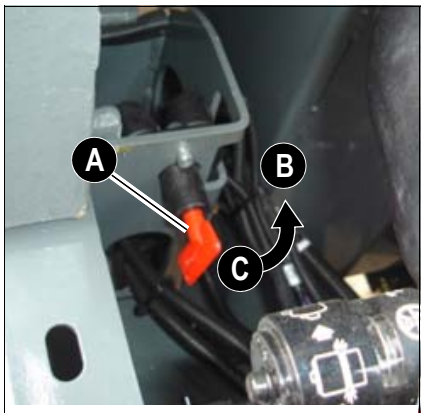


Fig. 29: Battery master switch

Important

Do not disconnect the battery while the engine is running.

Important

Power supply is interrupted directly after the battery, by means of a key

- *Disconnect the battery before working on the electric system.*

Interrupting power supply:

☞ *Turn key A of the battery master switch to position B and remove the key.*

Switching on power supply:

☞ *Insert key A in the battery master switch.*

☞ *Turn the key down to the notched position C.*

4 Troubleshooting

The information given in this chapter is provided for maintenance staff, for fast and reliable detection of malfunctions and their appropriate repair.

Repairs must be carried out by authorized staff.

4.1 Engine trouble

Problem	Possible causes	See
Engine does not start or is not easy to start	Wrong SAE grade of engine lubrication oil	*5-31*
	Fuel grade does not comply with specifications	*5-31*
	Defective or flat battery	*5-28*
	Loose or oxidized cable connections in starter circuit	
	Defective starter, or pinion does not engage	
	Wrong valve clearance	
	Defective fuel injector	
Engine starts, but does not run smoothly or faultless	Fuel grade does not comply with specifications	*5-31*
	Wrong valve clearance	
	Injection line leaks	
	Defective fuel injector	
Engine overheats. Temperature warning system responds	Oil level too low	*5-7*
	Oil level too high	*5-7*
	Dirty air filter	*5-12*
	Dirty oil cooler fins	
	Defective fuel injector	
Insufficient engine output	Oil level too high	*5-7*
	Fuel grade does not comply with specifications	*5-31*
	Dirty air filter	*5-12*
	Wrong valve clearance	
	Injection line leaks	
	Defective fuel injector	
Engine does not run on all cylinders	Injection line leaks	
	Defective fuel injector	
Insufficient or no engine oil pressure	Oil level too low	*5-7*
	Machine inclination too high (max. 25%)	
	Wrong SAE grade of engine lubrication oil	*5-31*
Engine oil consumption too high	Oil level too high	*5-7*
	Machine inclination too high (max. 25%)	

Problem		Possible causes	See
Engine smoke	Blue	Oil level too high	*5-7*
		Machine inclination too high (max. 25%)	
	White	Engine starting temperature too low	
		Fuel grade does not comply with specifications	*5-31*
		Wrong valve clearance	
		Defective fuel injector	
	Black	Dirty air filter	*5-12*
		Wrong valve clearance	
		Defective fuel injector	

5 Maintenance

5.1 Introduction

Operational readiness and the service life of machines are heavily dependent on maintenance.

It is therefore in the interest of the machine owner to perform the prescribed maintenance work.

Before performing service and maintenance work, always read, understand and follow the instructions given in:

- Chapter 2 “SAFETY INSTRUCTIONS” of this Operator's Manual

Perform the prescribed inspections and rectify any disorders before putting the machine into operation.

Secure open (engine) covers appropriately. Do not open (engine) covers on slopes or in strong wind.

When using compressed air, dirt and debris can be blown into your face. Therefore, wear protective googles, masks, and clothing when using compressed air.

Daily service and maintenance work, and maintenance according to maintenance plan **“A”** must be performed by a specifically trained operator. All other maintenance work must be performed by trained and qualified staff only.

The maintenance plans indicate when the maintenance work mentioned below must be performed – *see Maintenance plan (overview)* on page 5-33.

Front dump bucket maintenance strut

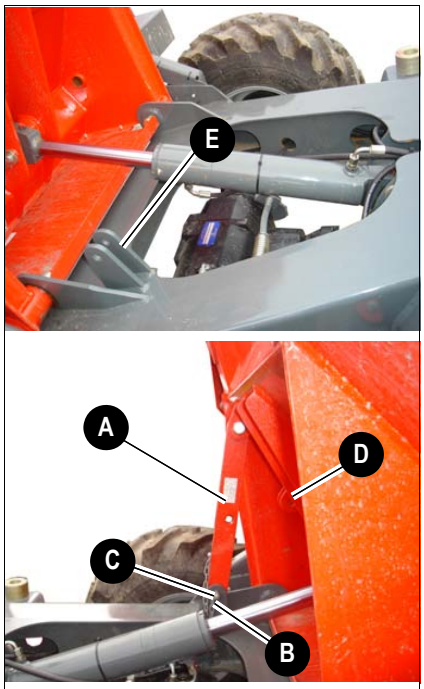


Fig. 3: Front dump bucket maintenance prop

WARNING

Crushing or striking hazard. An improperly supported dump bucket can fall unexpectedly during maintenance work.

☞ *Mount the red maintenance strut before you perform maintenance work with the dump bucket raised.*

Mount the maintenance strut as follows:

☞ *Raise the dump bucket.*

☞ *Remove spring plug **B** from pin **C.***

☞ *Remove pin **C** from guide **D.***

☞ *Lower the dump bucket until the holes of guide **E** and maintenance strut **A** are aligned.*

☞ *Insert pin **C** in guide **E.***

☞ *Secure pin **C** with spring plug **B.***

Mount the maintenance strut back onto the dump bucket, in the reverse order, if it is no longer needed!

Swivel dump bucket maintenance strut

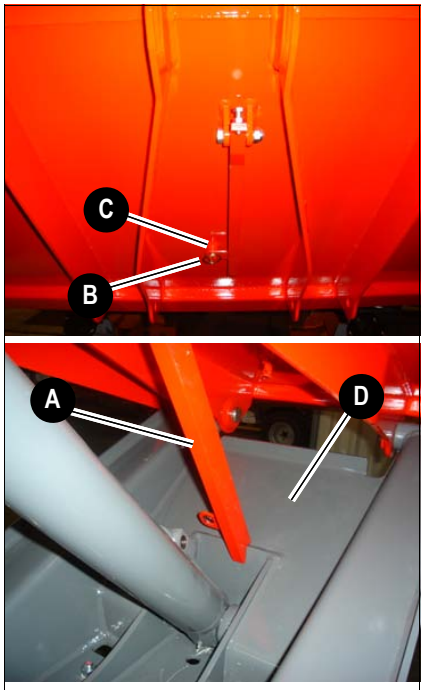


Fig. 4: Swivel dump bucket maintenance strut

WARNING

Crushing or striking hazard. An improperly supported dump bucket can fall unexpectedly during maintenance work.

☞ *Mount the red maintenance strut before you perform maintenance work with the dump bucket raised.*

Mount the maintenance strut as follows:

☞ *Raise the dump bucket.*

☞ *Remove safety pin **B** from pin **C.***

☞ Lower the dump bucket, slowly aligning the notch in the strut **A** (Fig.23) with the vertical plate in the dump bucket swivel base **D** (Fig. 23) until the strut notch is firmly engaged.

Store the maintenance strut back onto the dump bucket when it is no longer needed.

Important

Store the maintenance strut back onto the dump bucket when it is no longer needed.

5.2 Fuel system

Specific safety instructions

WARNING

Fire and fume inhalation hazards.

☞ *Do not refuel in closed rooms.*

☞ *Never perform maintenance or repair work on the fuel system in the vicinity of open flames or sparks.*

☞ *Never smoke when working on the fuel system or when refueling.*

☞ *Before refueling, stop the engine and remove the starting key.*

☞ *Wipe up any fuel spills immediately.*

☞ *Remove spilled fuel from the machine components and surfaces before use to reduce the risk of fire.*

Refueling

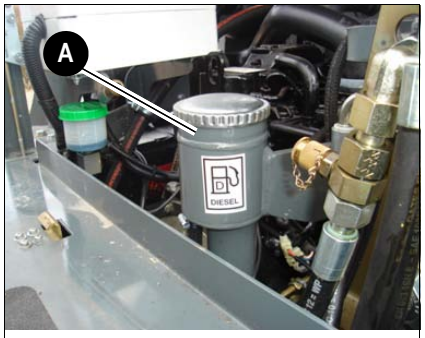


Fig. 5: Fuel filler inlet

Filler inlet **A** for the fuel tank is located under the engine cover, on the right in driving direction.

Environment

Use a suitable container to collect the fuel as it drains and dispose of it in an environmentally friendly manner!

Important

Do not run the fuel tank completely dry. Otherwise, air is drawn into the fuel system. This requires bleeding the fuel system – *see Bleeding the fuel system* on page 5-4.

Important

Fill up the tank with the correct fuel type at the end of each working day. This prevents condensation water from forming in the fuel tank over night. Do not fill the tank completely but leave some space for the fuel to expand.

Stationary fuel pumps

General

Only refuel from stationary fuel pumps. Fuel from barrels or cans is usually contaminated.
Even the smallest particles of dirt can cause:

- Increased engine wear
- Malfunctions in the fuel system
- Reduced effectiveness of the fuel filters

Refueling from barrels

If refueling from barrels cannot be avoided, note the following points (see fig. 6):

- Barrels must neither be rolled nor tilted before refueling
- Protect the suction pipe opening of the barrel pump with a fine-mesh strainer
- Immerse it down to a max. 15 cm (5.9 in.)above the floor of the barrel
- Only fill the tank using refueling aids (funnels or filler pipes) with integral microfilter
- Keep all refueling containers clean at all times

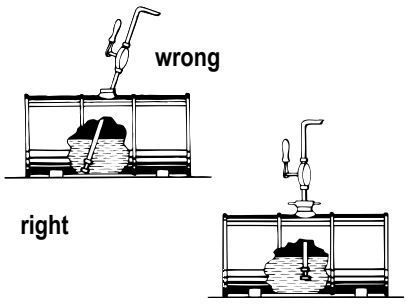


Fig. 6: Refueling from a barrel

Diesel fuel specification

Use only high-grade fuels

Grade	Cetane number	Use
• No. 2-D according to DIN 51601	**Min. 45**	For normal outside temperatures
• No. 1-D according to DIN 51601		For outside temperatures below 4 °C (39.2 °F)or for operation above 1500 m (4921 ft.) altitude

Bleeding the fuel system

WARNING

Fire and burn hazard. Draining fuel may ignite if it comes into contact with hot engine parts or the muffler system. Hot fuel may cause burns.

☞ *Always wear protective equipment and safety glasses when working with fuel.*

☞ *Never bleed the fuel system if the engine is hot.*

Bleed the fuel system in the following cases:

- After removing and fitting the fuel filter, prefilter or the fuel lines back on again.
- After running the fuel tank empty.
- After running the engine again, after it has been out of service for a longer period of time.

Bleed the fuel system as follows:

☞ *Fill the fuel tank.*

☞ *Turn the starter key to the first position.*

☞ *Wait about 5 minutes while the fuel system bleeds itself automatically.*

☞ *Start the engine.*

If the engine runs smoothly for a while, and then stops; or if it does not run smoothly:

☞ *Switch off the engine.*

☞ *Bleed the fuel system again as described above.*

☞ *Have this checked by authorized staff if necessary.*

Fuel prefilter with water separator

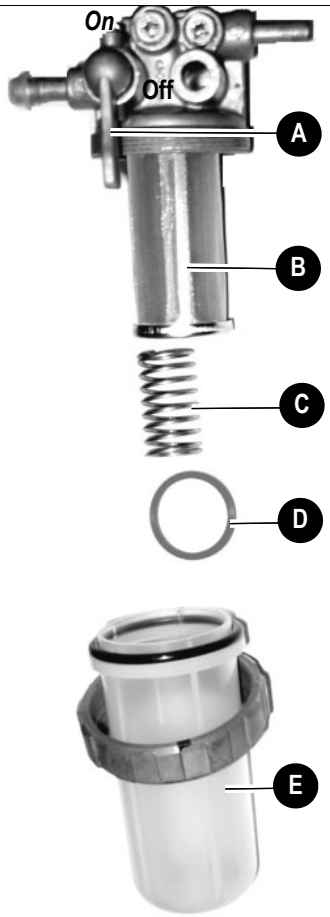


Fig. 7: Fuel prefilter

Check the fuel prefilter as follows:

- If the red indicator ring ***D*** in sight glass ***E*** rises.

☞ *Remove and clean the housing (sight glass).*

☞ *Remove and clean filter insert **B.***

☞ *Mount filter insert.*

☞ *Mount the housing (sight glass) with the maintenance display (red ring) and spring **D.***

☞ *Open stop cock **A.***

Interrupt fuel supply as follows:

☞ *Turn ball-type cock **A** to the **OFF** mark.*

➥ Fuel supply is interrupted.

☞ *Turn ball-type cock **A** to the **ON** mark.*

➥ Fuel supply is open again.

Environment

Thread **A** is fitted with a hose. Collect the water as it drains with a suitable container and dispose of it in an environmentally friendly manner.

Replacing the fuel filter

WARNING

Fire and burn hazard. Draining fuel may ignite if it comes into contact with hot engine parts or the exhaust system. Hot fuel may cause burns.

☞ *Always wear protective equipment and safety glasses when working with fuel.*

☞ *Never replace the fuel filter if the engine is hot.*

Environment

Use a suitable container to collect the fuel as it drains and dispose of it in an environmentally friendly manner!

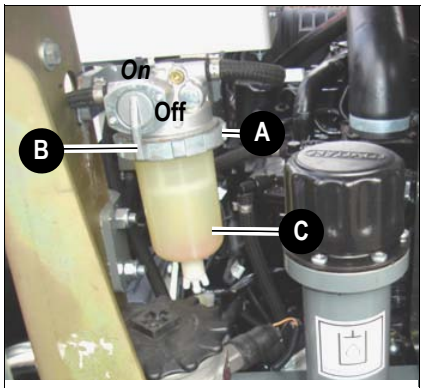


Fig. 8: Fuel filter

Removing the fuel filter

☞ *Close fuel cock **B.***

☞ *Slacken union nut **A.***
Caution: the filter housing contains fuel.

☞ *Remove filter housing **C.***

Installing the fuel filter

☞ *Install all elements in the reverse order with a new filter element.*

☞ *Open the stop cock on the water separator again.*

☞ *Bleed the fuel system – see Bleeding the fuel system on page 5-4.*

☞ *Make a test run – and check for tightness!*

Environment

Dispose of the old fuel filter cartridge by an ecologically safe method.

5.3 Engine lubrication system

NOTICE: Possible engine damage or power loss due to improper oil management. If the engine oil level is too low or if an oil change is overdue, this can cause engine damage or a loss of power.

☞ *Have the oil changed by an authorized workshop.*

☞ *– see chapter 5.13 Maintenance plan (overview) on page 5-33*

Checking the oil level

Important

Check the oil level once a day.
We recommend checking it before starting the engine. After switching off a warm engine, wait at least 5 minutes before checking.

Checking the oil level

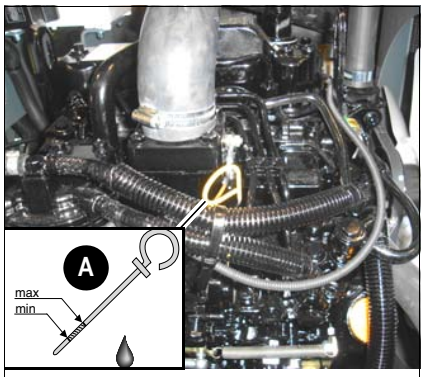


Fig. 9: Checking the oil level

☞ *Proceed as follows:*

- Park the machine on level ground.
- Switch off the engine!
- Let the engine cool down.
- Open the engine cover.
- Clean the area around the oil dipstick with a lint-free cloth.
- Oil dipstick **A**:

☞ Pull it out.

☞ Wipe it with a lint-free cloth.

☞ Push it back in as far as possible.

☞ Withdraw it and read off the oil level

☞ *Add oil if the oil level does not reach the MIN mark on the oil dipstick.*

Filling up engine oil

NOTICE: Possibility of engine damage from too much oil or incorrect engine oil.

☞ *Do not add engine oil above the MAX mark of oil dipstick 9/A.*

☞ *Use only the specified engine oil.*

Environment

Use a suitable container to collect the engine oil as it drains and dispose of it in an environmentally friendly manner!

Filling up engine oil

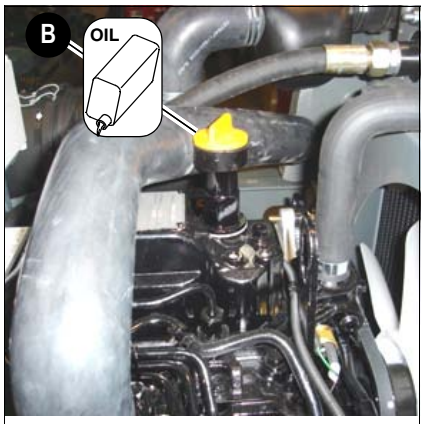


Fig. 10: Filling up engine oil

☞ *Proceed as follows:*

- Clean the area around oil filler cap **B** with a lint-free cloth.
- Open filler cap **B.**
- Raise oil dipstick **A** slightly to allow any trapped air to escape.
- Add engine oil.
- Wait about 3 minutes until all the oil has run into the oil sump.
- Check the oil level – *see Checking the oil level* on page 5-7.
- Fill up if necessary and check the oil level again.
- Close filler cap **B.**
- Push oil dipstick **A** back in as far as possible.
- Completely remove all oil spills from the engine.

5.4 Engine and hydraulics cooling system

The oil/water radiator is located in the engine compartment, behind the engine. It cools the diesel engine, and the hydraulic oil of the drive and work hydraulics.

The expansion tank for the coolant is located in the engine compartment next to the toolbox.

Checking / filling uo coolant

NOTICE: Improperly maintaining the cooling system can cause engine damage.

- Dirt on the radiator fins reduces the radiator's heat dissipation capacity.
  - ▶ Clean the outside of the radiator at regular intervals. Use oil-free compressed air (2 bar max.) to clean. Maintain a certain distance to the radiator to avoid damage to the radiator fins. Refer to the maintenance plans in the appendix for the cleaning intervals.
  - ▶ In dusty or dirty work conditions, clean more frequently than indicated in the maintenance plans.
- An insufficient coolant level reduces the heat dissipation capacity as well and can lead to engine damage:
  - ▶ Check the coolant level at regular intervals. Refer to the maintenance plans for the recommended intervals.
  - ▶ If coolant must be added frequently, check the cooling system for leaks and/or contact your dealer.
  - ▶ Never add cold water/coolant if the engine is warm.
  - ▶ After filling the expansion tank, make a test run with the engine and check the coolant level again after switching off the engine.
- The use of the wrong coolant can destroy the engine and the radiator.
  - ▶ Add enough antifreeze compound to the coolant – but never more than 50 %. If possible use brand-name antifreeze compounds with anticorrosion additives.
  - ▶ Observe the coolant compound table – see chapter 6.12 “Coolant compound table” on page 6-4.
  - ▶ Do not use radiator cleaning compounds if an antifreeze compound has been added to the coolant – otherwise this causes sludge to form, which can damage the engine.

Environment

Use a suitable container to collect the coolant as it drains and dispose of it in an environmentally friendly manner!

Specific safety instructions

- Follow the procedure below after filling the expansion tank:
  - ▶ Test run the engine.
  - ▶ Switch off the engine.
  - ▶ Let the engine cool down.
  - ▶ Check the coolant level again.

CAUTION

Burn hazard. The coolant in the system is hot under normal operating conditions and under about 1 bar (15 psi) pressure.

☞ *Never open the coolant tank or drain coolant if the engine is hot.*

☞ *Wait at least 15 minutes after stopping the engine.*

☞ *Wear protective glasses, gloves and clothing.*

☞ *Open filler cap B to the first notch and allow the pressure to escape.*

☞ *Do not proceed with checking, maintaining or repairing the cooling system unless the components are comfortable to touch (less than 49°C (120°F)).*

CAUTION

Hazardous material. Coolant mixtures are poisonous and flammable. Contact with skin and eyes should be avoided.

☞ *Wash skin immediately to remove coolant mixture from the skin to avoid irritation.*

☞ *Wash eyes immediately if coolant comes in contact with the eye. Seek medical attention immediately.*

☞ *Store coolant concentrate and mixtures in a secure space to prevent unauthorized contact.*

☞ *Do not store or use coolant or coolant mixtures near open flames including smoking materials.*

➥ Dispose of used coolant through approved methods for recycling. Do not dispose of coolant or mixtures in sewers, toilets or dumping on the ground.

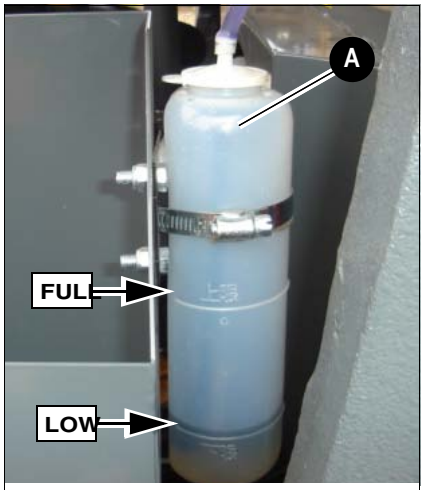


Fig. 11: Expansion tank for coolant

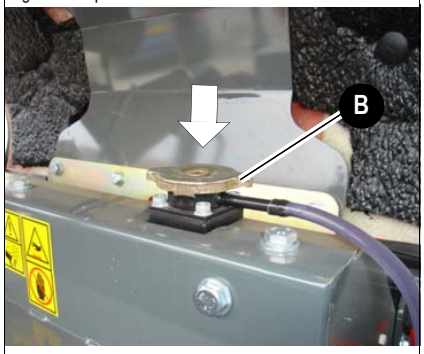


Fig. 11: Radiator

Checking the coolant level

☞ *Proceed as follows:*

- Park the machine on level ground.
- Switch off the engine!
- Remove the key and carry it with you.
- Let the engine and the coolant cool down.
- Open the engine cover.
- Check the coolant level on the transparent coolant tank **A** and on the radiator **B**

☞ If the coolant level is below the **LOW** seam or if there is no coolant at the radiator's filler inlet:

- Add coolant to the coolant tank.

Important

Check the coolant level once a day.
We recommend checking it before starting the engine.

Filling up coolant

After the engine has cooled down:

☞ *Release overpressure in the radiator.*

☞ *Carefully open the cap to the first notch and fully release the pressure.*

☞ *Open filler cap B.*

☞ *Add coolant up to the lower edge of the filler inlet (radiator).*

☞ *Close filler cap B.*

☞ *Start the engine and let it warm up for about 5 – 10 minutes.*

☞ *Switch off the engine.*

☞ *Remove the key and carry it with you.*

☞ *Let the engine cool down.*

☞ *Check the coolant level again.*

➥ The coolant level must be between the **LOW and FULL** tank seams.

☞ *If necessary, add coolant and repeat the procedure until the coolant level remains constant.*

Important

Check the antifreeze every year before the cold season sets in!

5.5 Air filter

NOTICE: Possible equipment damage. The filter cartridge will be damaged if it is washed or brushed out.

Keep in mind the following to avoid premature engine wear:

☞ *Do not clean the filter cartridge.*

☞ *Replace the filter cartridge when the indicator light comes on.*

☞ *Never reuse a damaged filter cartridge.*

☞ *Ensure cleanliness when replacing the filter cartridge.*

Control element **A** on the air filter monitors the filter cartridge.

☞ *Replace filter B if:*

- Control element **A** indicates air filter contamination
- According to the maintenance plan

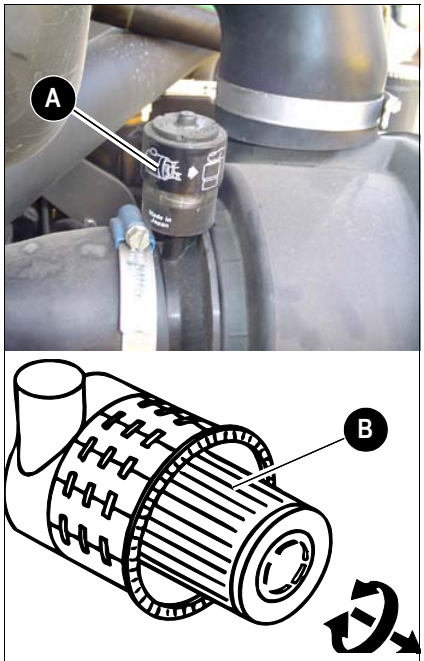


Fig. 12: Indicator for air filter contamination

Important

For applications in especially dusty environment, replace or clean the air filter more frequently.

NOTICE: Filter cartridge degradation. Filter cartridges degrade prematurely when in service in acidic air, such as acid production facilities, steel and aluminum mills, chemical plants and other nonferrous-metal plants.

☞ *Replace filter B after no more than 50 service hours.*

General instructions for air filter maintenance:

- Store filters in their original packaging and in a dry place.
- Do not knock the filter against other objects as you install it.
- Check air filter attachments, air intake hoses and air filters for damage, and immediately repair or replace if necessary.
- Check the screws at the induction manifold and the clamps for tightness.

Replacing the filter

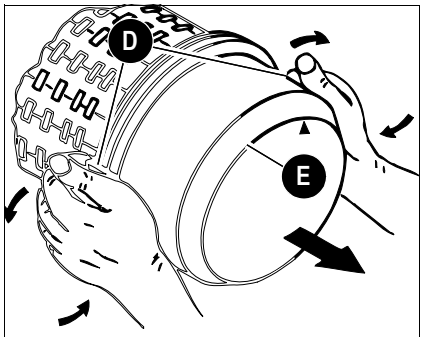


Fig. 13: Removing the lower housing section

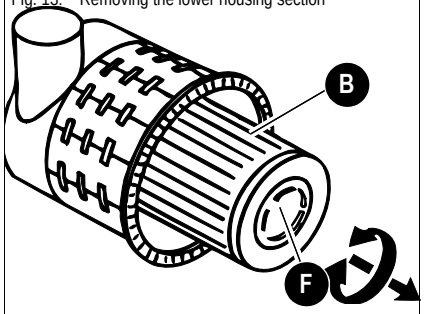


Fig. 14: Removing the filter element

- Replace filter *A* as follows:

☞ *Switch off the engine.*

☞ *Remove the key and carry it with you.*

☞ *Let the engine cool down.*

☞ *Open the engine cover.*

☞ *Remove dirt and dust from the air filter and the area around the air filter.*

☞ *Fold both bow clips* **D** *on lower housing section* **E** *to the outside.*

☞ *Remove lower housing section* **E.**

☞ *Unscrew wing nut* ***F.***

☞ *Carefully remove filter* **B** *with slightly turning movements.*

☞ **Make sure** *all dirt (dust) inside the air filter housing has been removed.*

☞ Clean the parts with a clean lint-free cloth, do not use compressed air.

☞ *Check the air filter cartridges for damage, only install intact filters.*

☞ *Carefully insert the new filter* **B** *in the air filter housing.*

☞ *Position lower housing section* **E** *(make sure it is properly seated).*

☞ *Close both bow clips* **D.**

5.6 V-belt

CAUTION

Crushing, cutting, or burn hazards.

☞ *Stop the engine and permit a cool-down time. Wait until the engine is comfortable to touch.*

☞ *Only check, retighten, or replace the V-belt when the engine is stopped.*

☞ *Disconnect the battery or the battery master switch before proceeding with work on the V-belt.*

NOTICE: Cracked and stretched V-belts cause engine damage.

☞ *Have the V-belt replaced by an authorized workshop.*

Check the V-belt once a day or every 10 service hours, and retighten if necessary!
Retighten new V-belts after about 15 minutes of running time.

Checking V-belt tension

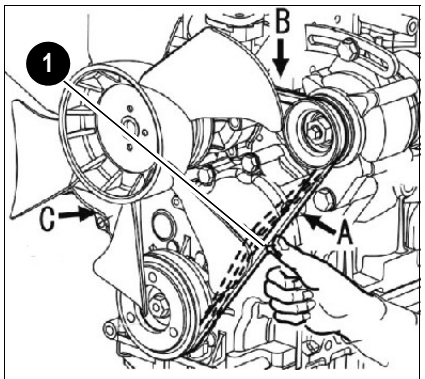


Fig. 15: Checking V-belt tension

- Check as follows:
  - ☞ Switch off the engine.
  - ☞ Remove the key and carry it with you.
  - ☞ Disconnect the battery.
  - ☞ Let the engine cool down.
  - ☞ Open the engine cover.
  - ☞ Carefully check V-belt **1** for damage, cracks or cuts.
  - ☞ Replace the V-belt if it touches the base of the V-belt groove or the discs of the pulley.
- If the V-belt is damaged:
  - ☞ Have the V-belt replaced by authorized staff.
  - ☞ Press with your thumb about 100 N(22.5 lbs)to check the deflection of the V-belt between the crankshaft disc and the fan wheel. A new V-belt should have a deflection of 6 to 8 mm(0.23 to 0.31 in), a used V-belt (after about 5 minutes running time) should have a deflection of 7 to 9 mm(0.27 to 0.35).
  - ☞ Retighten the V-belt if necessary.

Retightening the V-belt

NOTICE: Possible engine damage. Overtightening the V-belt can damage the V-belt, the V-belt guide and the water pump bearing.

☞ *Avoid contact of oil, grease or similar substances with the V-belt.*

☞ *Check V-belt tension – see "Checking V-belt tension on page 3-14.*

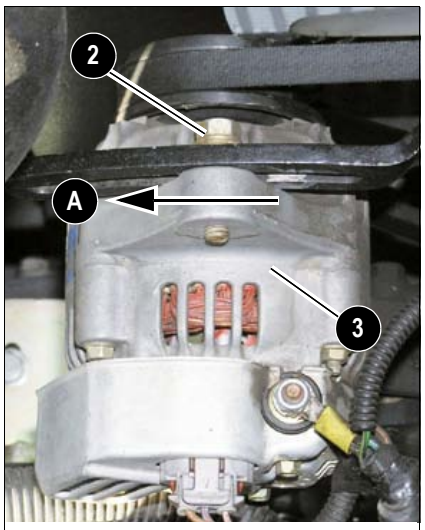


Fig. 16: Retightening the V-belt

- Retighten as follows:
  - ☞ Switch off the engine.
  - ☞ Fold the control lever base up.
  - ☞ Remove the key and carry it with you.
  - ☞ Disconnect the battery or the battery master switch.
  - ☞ Let the engine cool down.
  - ☞ Open the engine cover.
  - ☞ Slacken fastening screws **2** of alternator **3.**
  - ☞ Use a suitable tool to push the alternator in the direction of arrow **A** until reaching the correct V-belt tension (fig. 16).
  - ☞ Keep the alternator in this position, and at the same time retighten fastening screws **2.**
  - ☞ Check V-belt tension again and adjust it if necessary.
  - ☞ Connect the battery or the battery master switch.
  - ☞ Close the engine cover.

5.7 Hydraulic system

Specific safety instructions

WARNING

Pressurized hydraulic oil hazard. Hydraulic oil escaping under high pressure can catch fire, damage property, penetrate the skin and cause severe burns and injuries.

☞ *Do not operate the machine with leaking or damaged hydraulic system components.*

☞ *Use a piece of cardboard to diagnose the source of hydraulic leaks.*

☞ *Hydraulic oil can be hot and can cause serious burns if contact is made with skin. If contact occurs with hot oil, seek immediate medical attention and treatment for the burn.*

☞ *Wear safety glasses/goggles to avoid eye contact. If oil contacts the eye flush immediately with clean water and seek emergency medical treatment.*

☞ *Seek immediate medical attention if oil penetrates the skin. Oil can cause serious infections.*

- Release the pressure in all lines carrying hydraulic oil prior to any maintenance and repair work. To do this:
  - Lower all hydraulically controlled attachments
  - Move all control levers of the hydraulic control valves several times
- Hydraulic oil escaping under high pressure can penetrate the skin and cause serious injuries. Always consult a doctor immediately even if the wound seems insignificant – otherwise serious infections could set in!
- If the hydraulic oil in the sight glass is cloudy, this indicates that water or air has penetrated the hydraulic system. This can cause damage to the hydraulic pump!
- Oil flowing out of high pressure lines can cause fire or malfunctions, and severe injuries or damage to property. Interrupt work immediately if slack nuts or damaged hoses and lines are detected.

  ☞ Contact your Wacker Neuson dealer immediately
- Replace the hose or line if one of the problems mentioned below is detected.

  ☞ Damaged or leaky hydraulic seals.

  ☞ Worn or torn shells or uncovered reinforcement branches.

  ☞ Expanded shells in several positions.

  ☞ Entangled or crushed movable parts.

  ☞ Foreign bodies jammed or stuck in protective layers.

NOTICE: Possible equipment damage. Contaminated hydraulic oil, lack of oil, or the wrong hydraulic oil can severely damage the hydraulic system.

☞ *Take care to avoid contamination when working.*

☞ *Always use the filling screen when refilling hydraulic oil.*

☞ *Only use authorized oils of the specified type.*
– see chapter 5.14 “Fluids and lubricants” on page 5-34.

☞ *Always fill up hydraulic oil before the level gets too low.*
– see “Filling up hydraulic oil” on page 5-19.

☞ *If the hydraulic system is filled with biodegradable oil, then only use biodegradable oil of the same type for filling up. Observe the label on the hydraulic oil tank.*

☞ *Contact your Wacker Neuson dealer immediately if the hydraulic system filter is contaminated with metal shavings.*

Environment

Collect drained hydraulic oil and biodegradable oil in a suitable container! Dispose of drained oil and used filters by an ecologically safe method. Always contact the relevant authorities or commercial establishments in charge of oil disposal before disposing of biodegradable oil.

Checking the hydraulic oil level

WARNING

Personal injury hazard. Escaping oil may cause serious injuries.

☞ *Never fill the oil level above the MAX mark.*

☞ *Check the hydraulic oil level each time the machine is put into service or once a day.*

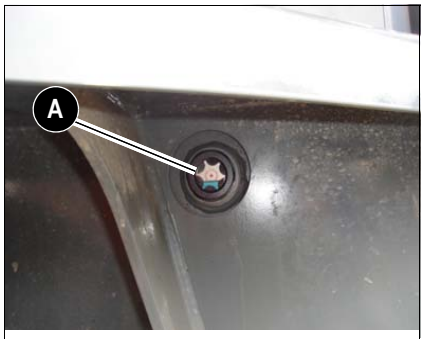


Fig. 17: Oil level indicator on the hydraulic oil tank

☞ *Proceed as follows:*

- Park the machine on level ground.
- Retract all hydraulic rams.

☞ Fully dump in the dump bucket.

- Switch off the engine.
- Check the oil level on sight glass **A.**
- Sight glass **A** is located under the right-hand side mudguard.
- A gauge element in sight glass **A** indicates the oil level.

If the oil level is lower.

- Fill up hydraulic oil.

Oil level must be at the **FULL** level.

The oil level varies according to the machine's operating temperature:

Machine condition	Temperature	Oil level
• Before putting into operation	Between 10 and 30 °C (Between 50° and 86°F.)	**LOW** mark
• Normal operation	Between 50 and 90 °C (Between 122° and 194°F.)	**FULL** mark

Important

Measure the oil level of the hydraulic system only after the machine reaches its operating temperature.

Filling up hydraulic oil

WARNING

Personal injury hazard. Removing the hydraulic filter plug can cause pressurized oil to escape. Escaping oil may cause serious injuries.

☞ *Allow the hydraulic oil to cool to a temperature that is comfortable to the touch.*

☞ *Slightly loosen the breather plug on the hydraulic reservoir enough to relieve pressure in the reservoir.*

Do not fill up the hydraulic oil unless the engine is switched off. Otherwise, hydraulic oil will overflow at the filler opening on the hydraulic tank.

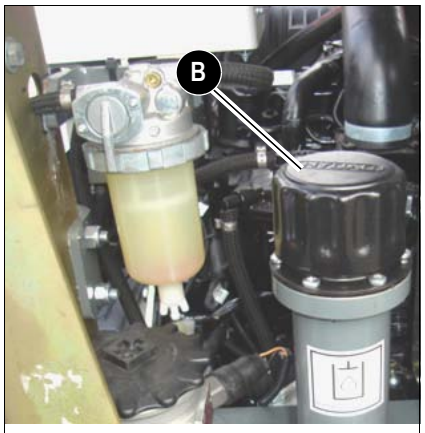


Fig. 18: Hydraulic oil tank

☞ *Fill up as follows:*

- Park the machine on level ground.
- Retract all hydraulic rams.
- Switch off the engine.
- Clean the area around filler inlet **B** with a cloth.
- Open filler inlet **B.**

With the filter insert in place:

- Add hydraulic oil.
- Check the hydraulic oil level on sight glass **A.**
- Fill up if necessary and check again.
- Firmly tighten plug **B.**

Changing hydraulic oil

Important

Only change the hydraulic oil if it is warm (about 50 °C / 122 °F).
Lower the dump bucket in center position before draining the oil (dumper in straight-ahead position).

Environment

Dispose of the old hydraulic oil by an ecologically safe method.

☞ *Open the drain plug to let the oil drain into a container.*

☞ *Check the hydraulic oil tank for contamination and clean if necessary.*

☞ *Replace the filter according to the maintenance specifications.*

☞ *Screw the drain plug back in correctly.*

☞ *Fill in clean hydraulic oil through the strainer – see Filling up hydraulic oil on page 5-19.*

☞ *Close the hydraulic oil tank correctly.*

☞ *Let the machine run at idling speed without load for some minutes.*

Fouling indicator for hydraulic oil filter

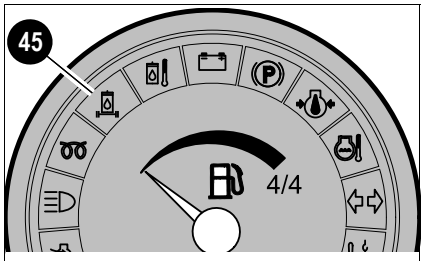


Fig. 19: Fouling indicator for hydraulic oil filter

A red indicator on the instrument panel monitors the filter.

Replace the filter:

- If the indicator comes on when the hydraulic oil is at operating temperature
- According to the maintenance interval

In cold weather the indicator can come on immediately when the engine is started. This is caused by increased oil viscosity. In this case:

☞ *Let the engine run at idling speed for about 2 minutes*

Replacing the hydraulic oil filter element

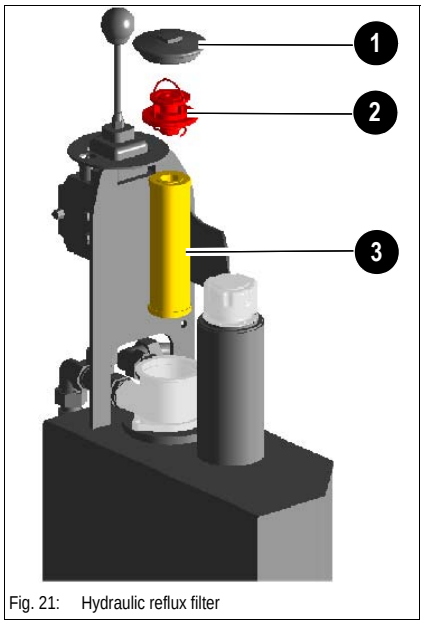


Fig. 21: Hydraulic reflux filter

Proceed as follows:

☞ *Switch off the engine.*

☞ *Open cover **1** by about 2 turns and wait until the oil level in the filter housing drops to the oil level in the hydraulic oil tank.*

☞ *Open the cover completely and remove it.*

☞ *Pull filler pipe **2** upwards with a slightly turning movement, together with filter element **3**.*

☞ *Remove the filter element from the filler pipe and dispose of it.*

☞ *Slide the filler pipe onto the new filter element and insert it in the filter.*

☞ *Tighten the cover by hand.*

Important information for the use of biodegradable oil

- Use only the biodegradable hydraulic fluids which have been tested and approved by Neuson Baumaschinen GmbH. Always contact Neuson Baumaschinen GmbH for the use of other products which have not been recommended. In addition, ask the oil supplier for a written declaration of guarantee. This guarantee is applicable to damage occurring on the hydraulic components, which can be proved to be due to the hydraulic fluid.
- Use only biodegradable oil of the same type for filling up. In order to avoid misunderstandings, a label providing clear information is located on the hydraulic oil tank (next to the filler inlet) regarding the type of oil currently used! Replace missing labels!
  The joint use of two different biodegradable oils can affect the quality of one of the oil types. Therefore, make sure the remaining amount of initial hydraulic fluid in the hydraulic system does not exceed 8 % when changing biodegradable oil (manufacturer indications).
- Do not fill up with mineral oil – the content of mineral oil should not exceed 2 % in order to avoid foaming problems and to ensure biological degradability.
- When running the machine with biodegradable oil, the same oil and filter replacement intervals are valid as for mineral oil – *see chapter 5.13 Maintenance plan (overview)* on page 5-33.
- Always have the condensation water in the hydraulic oil tank drained by an authorized workshop before the cold season. The water content may not exceed 0.1 % by weight.
- The instructions in this Operator's Manual concerning environmental protection are also valid for the use of biodegradable oil.
- If additional hydraulic attachments are mounted or operated, use the same type of biodegradable oil for these attachments to avoid mixtures in the hydraulic system.

Subsequent change from mineral oil to biodegradable oil must be performed by an authorized Wacker Neuson service center.

Checking hydraulic pressure lines

Specific safety instructions

WARNING

Pressurized hydraulic oil hazard. Hydraulic oil escaping under high pressure can catch fire, damage property, penetrate the skin, and cause severe burns and injuries.

- ☞ *Do not operate the machine with leaking or damaged hydraulic system components.*
- ☞ *Use a piece of cardboard to diagnose the source of hydraulic leaks.*
- ☞ *Hydraulic oil can be hot and can cause serious burns if contact is made with skin. If contact occurs with hot oil, seek immediate medical attention and treatment for the burn.*
- ☞ *Wear safety glasses/goggles to avoid eye contact. If oil contacts the eye flush immediately with clean water and seek emergency medical treatment.*
- ☞ *Seek immediate medical attention if oil penetrates the skin. Oil can cause serious infections.*
- ☞ *Retighten leaking threaded fittings and hose connections only when the system is not under pressure; i.e., release the pressure before working on pressurized lines.*
- ☞ *Never weld or solder damaged or leaking pressure lines and threaded connections. Replace damaged parts with new ones.*
- ☞ *Do not check for leaks with an incandescent light or open flame due to explosive fire risk from vaporized oil mist.*

- Leaks and damaged pressure lines must be immediately repaired or replaced by an authorized workshop or after-sales staff.
  This not only increases the operating safety of your machine but also helps to protect the environment.
- Replace hydraulic hoses every 6 years from the date of manufacture, even if they do not seem to be damaged.

In this respect, we recommend that you observe all the relevant safety regulations for hydraulic lines, as well as the safety regulations regarding accident prevention and occupational health and safety in your country. Also observe DIN 20066, part 5.

5.8 Tires

Fig. 22: Tires

Tire wear can vary according to work and ground conditions.

CAUTION

Personal injury hazard. Improperly repaired tires or rims can cause accidents.
☞ *All repair work on tires and rims may only be performed by an authorized Wacker Neuson service center.*

☞ *We recommend checking the tires for wear and the wheel nuts for tightness once a day.*

☞ *Park the machine on firm and level ground to check and perform maintenance.*

Important

Checking the tires at regular intervals increases operational safety and the service life of the tires, and reduces machine downtimes. Please refer to *Chapter 6.10 "Tires"* for the authorized tire types and the correct tire pressures.

Important

Replace tires with new ones after 6 years (irrespective of wear) and dispose of them correctly. After this period, the rubber no longer has its full capability due to various chemical and physical processes.

Inspection work

☞ *Perform the following maintenance work once a day:*

- Visual check of the tire condition.
- Check the tire pressure.
- Check tire and rim (outside and inside) for damage.
- Check for wear.
- Remove foreign bodies from the tire tread.
- Remove traces of oil and grease from the tires.

Wheel change

NOTICE: The wheels are heavy and can damage the threads on the wheel studs if they are handled incorrectly.

☞ *Use suitable assembly tools, such as covering sleeves for the studs and a jack capable of handling the load.*

Removing the wheels

Proceed as follows:

☞ *Park the machine on level and firm ground and prevent it from rolling away.*

☞ *Slightly loosen the wheel nuts of the wheel you want to remove.*

☞ *Place a jack under the axle body, making sure it is standing firmly.*

☞ *Raise the side of the axle from which you want to remove the wheel.*

☞ *Check the machine is standing firmly.*

☞ *Completely remove the wheel nuts.*

☞ *Remove the wheel.*

Fitting the wheels

Proceed as follows:

☞ *Place the wheel onto the wheel studs.*

☞ *Tighten all wheel nuts part-way.*

☞ *Lower the raised axle.*

☞ *Tighten the wheel nuts to the prescribed torque of 350 – 300 Nm (221 - 258 ft. lbs.)*

Important

Subsequent to changing wheels check the wheel nuts for tightness after 10 service hours – tighten if necessary!

5.9 Axles

CAUTION

Burn hazard. The axle housings can be very hot immediately after operating the dumper.

☞ *Do not perform any work on the axles until the housings are cool to the touch.*

☞ *Slowly open filler plug **A** to release the pressure inside.*

Checking the oil level and filling up oil

Fig. 23: Checking the oil level

☞ *Park the machine on firm and level ground.*

☞ *Place the machine so that filler plug **A** is at the left.*

☞ *Remove the starter key.*

☞ *Unscrew screws A.*

➥ The oil must be level with opening **A.**

➥ If the oil level is lower.

☞ *Add oil through opening **A** until it flows out slightly.*

☞ *Screw screws **A** back in again.*

☞ *Move the machine a few meters.*

Draining oil

☞ *Park the machine on firm and level ground*

☞ *Place the machine so that filler plug **A** is at the bottom*

☞ *Remove the starter key*

☞ *Unscrew screws **A***

➥ The oil now flows out of opening **A**

☞ Use a suitable container to collect the oil as it drains

Environment

Collect the oil with a suitable container and dispose of it in an environmentally friendly manner.

5.10 Electric system

Specific safety instructions

WARNING

Batteries can explode or cause chemical burns. A battery contains sulfuric acid and emits explosive gases when heavily discharged.

☞ *Do not smoke or use an open flame near the battery.*

☞ *Do not handle the battery recklessly, causing acid to leak or spill.*

☞ *Do not add circuits or electrical accessories that exceed the system capacity.*

☞ *Do not connect a circuit without a correctly-rated fuse or circuit breaker.*

NOTICE: Possible equipment damage from improper battery connections.

☞ *When connecting the battery leads, make sure the poles +/– are not inverted, otherwise sensitive electric components will be damaged*

☞ *Use only 12V power sources. Higher voltages will damage the electric components.*

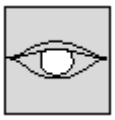
☞ *Do not interrupt voltage-carrying circuits at the battery terminals because of the danger of sparking.*

☞ *To prevent short circuits, never place tools or other conductive articles on the battery.*

☞ *Disconnect the negative (–) battery terminal from the battery before starting repair work on the electric system.*

- Dispose of used batteries properly

Service and maintenance work at regular intervals



Before driving the machine

☞ *Check every time before driving the machine:*

- Is the light system OK?
- Is the signalling and warning system OK?

Every week

☞ *Check once a week:*

- Cable and earth connections.
- Battery charge condition – *see Battery* on page 5-28.
- Condition of battery terminals.

Instructions concerning specific components

Cables, bulbs and fuses

Always observe the following instructions:

- Defective components of the electric system must always be replaced by an authorized expert.
- When performing maintenance work on the electric system, pay particular attention to ensuring good contact in leads.

Alternator

Always observe the following instructions:

- Only test run the engine when the battery is connected.
- When connecting the battery, make sure the poles (+/–) are not inverted.
- Always disconnect the battery before performing welding work or connecting a quick battery charger.

Battery

WARNING

Battery acid hazard. The battery contains highly caustic sulphuric acid. This acid must not be allowed to come into contact with the skin, the eyes, clothing, or the machine.

☞ *When recharging and/or working near the battery, always wear goggles and protective clothing with long sleeves.*

☞ *If acid is spilled, thoroughly rinse affected skin immediately with clean water and seek medical attention immediately.*

WARNING

Battery explosion hazard. Lead acid batteries can generate a potentially explosive hydrogen and oxygen mixture. Batteries can explode or rupture during jump starting, particularly if the electrolyte is low or has been frozen.

☞ *Avoid open flames and sparks in the vicinity of the battery. Do not smoke.*

☞ *Before jump starting, take the battery to the dealer for appraisal by a qualified technician.*

☞ *Replace a dead battery with a new one equivalent to the original.*

☞ *Always disconnect the negative terminal (–) from the battery before starting repair work on the electric system.*

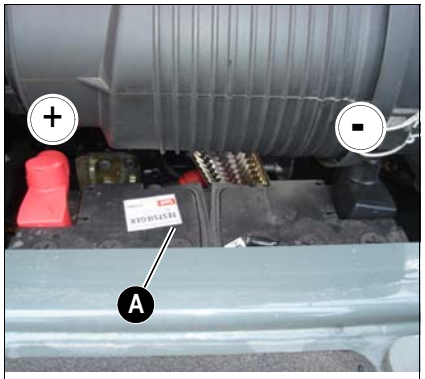


Fig. 24: Battery

Battery **A** is located underneath the engine cover. The battery is “maintenance-free”. However have the battery checked at regular intervals to make sure the electrolyte level is between the MIN and MAX marks.

Checking the battery requires it to be removed and must be performed by an authorized workshop.

Always follow the specific battery safety instructions!

Important

Do not disconnect the battery while the engine is running.

5.11 General maintenance work

Cleaning

Cleaning the machine is divided into 2 separate areas:

- Exterior of the machine
- Engine compartment

The wrong choice of cleaning equipment and agents can impair the operating safety of the machine and undermine the health of the persons in charge of cleaning the machine. It is therefore essential to observe the following instructions.

General instructions for all areas of the machine

When using washing solvents

- Ensure adequate room ventilation.
- Wear suitable protective clothing.
- Do not use flammable liquids, such as petrol or diesel.

When using compressed air

- Work carefully.
- Wear goggles and protective clothing.
- Do not aim the compressed air at the skin or at other people.
- Do not use compressed air for cleaning your clothing.

When using a high-pressure cleaner or steam jet

- Electric components and damping material must be covered and not directly exposed to the jet.
- Cover the vent filter on the hydraulic oil tank and the filler caps for fuel, hydraulic oil etc.
- Protect the following components from moisture:
  - Engine
  - Electric components such as the alternator etc.
  - Control devices and seals.
  - Air intake filters etc.

When using volatile and easily flammable anticorrosion agents and sprays:

- Ensure adequate room ventilation.
- Do not use unprotected lights or naked flames.
- Do not smoke!

☞ *Exterior of the machine*

NOTICE: Cleaning the machine improperly can cause engine damage.

☞ *Follow the recommendations below to properly clean the machine and the engine.*

The following articles are generally suitable:

- High-pressure cleaner
- Steam jet

Engine compartment

CAUTION

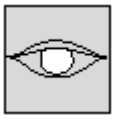
Cutting, crushing, or burn hazards.
☞ *Stop the engine before cleaning.*

NOTICE: Possibility of sensor damage. Water or steam jet cleaners can penetrate sensitive electronic components, leading to sensor failure and possible engine damage.

☞ *Allow the machine to cool completely before cleaning the engine with a water or steam jet.*

☞ *Do not point the jet directly at electric sensors such as the oil pressure switch.*

Screw connections and attachments



All screw connections must be checked regularly for tightness, even if they are not listed in the maintenance schedules.

☞ *Engine fastening screws.*

☞ *Fastening screws on the hydraulic system.*

☞ *Line and pin fastenings on the attachment.*

Retighten loose connections immediately. Contact an authorized workshop if necessary.

Pivots and hinges

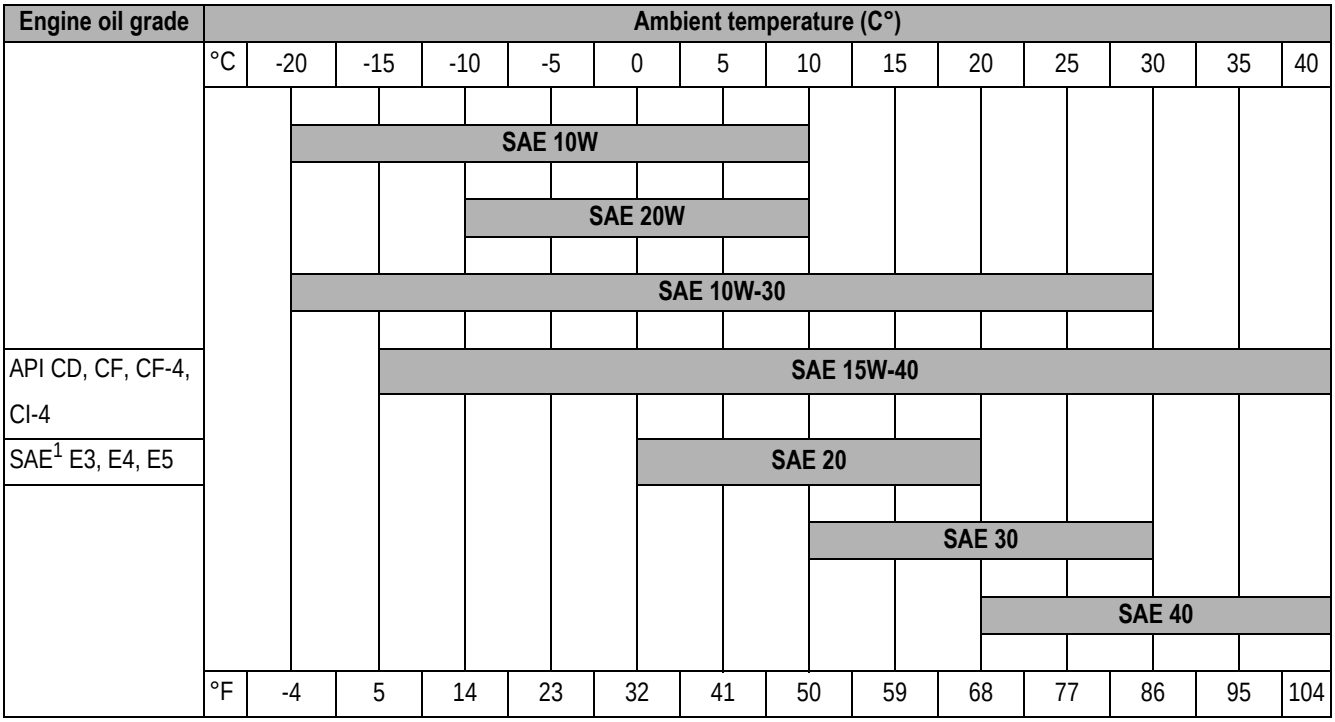
Lubricate all mechanical pivots on the machine (such as joints) and fittings at regular intervals even if they are not listed in the lubrication plan.

5.12 Fluids and lubricants

Component / application		Engine / machine fluid	Specification	Season / temperature	Capacities[1]
Diesel engine		Engine oil	API CD, CF, CF-4, CI-4	-15 °C +45 °C	5.25 l
Hydraulic oil tank		Hydraulic oil	HVLP46[2] 200 Hydraulic	Year-round	48 l
		Biodegradable oil[3]	PANOLIN HLP Synth 46		
			FINA BIOHYDRAN SE 46		
			BP BIOHYD SE-46 Biodegradeable Hydraulic 32/46		
All lubrication points			FINA Energrease L21M Mobilgrease CM-P	Year-round	As required
Battery terminals		Acid-proof grease[4]	FINA Marson L2 Mobilux EP2	Year-round	As required
Fuel tank		Diesel fuel	No. 2-D, DIN 51601 grade	Over 4 °C	40 l
			No. 1-D, DIN 51601 grade	Below 4 °C	
Radiator		Coolant	Water + antifreeze; SP-C	Year-round	8.50 l
Axles	Differential	Transmission Oil	SAE85W90LS (API GL4 - MIL L-2105)	Once a year or every 1000 s/h [5]	4.2 l
	Semiaxle				0.35 l
	Transfer gearbox				0.65 l

1. The capacities indicated are approximative values; the oil level check alone is relevant for the correct oil level
1. Capacities indicated are no system fills
2. According to DIN 51524 section 3
3. Hydraulic ester oils (HEES)
4. Standard acid-proof grease
5. First replacement after 50 service hours

Oil grades for the diesel engine, depending on temperature



1. According to DIN 51511

5.13 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	Every 50 s/h	Every 250 s/h	Every 500 s/h	Once a year or after 1000 s/h	After 1500 s/h	Customer
Fluid and filter changes ( ):							
Carry out the following oil and filter changes (check oil levels after test run):							
• Engine oil [1]		●	●				
• Engine oil filter [2]		●	●				
• Fuel filter [3]		●	●				
• Air filter element				●			
• Coolant					●		
• Hydraulic oil filter insert [4]		●		●			
• Hydraulic oil				●			
• Hydraulic oil tank breather					●		
Inspection work ( ):							
Check the following material. Refill if necessary:							
• Engine oil	●						●
• Engine coolant	●						●
• Hydraulic oil	●						●
Clean the water ducts [5]					●		
Check cooler for engine and hydraulic oil for contamination. Clean if necessary	●						●
Check cooling systems, heating and hoses for leaks and pressure (visual check)	●						●
Air filter (damage)	●						●
Check the air filter, clean if necessary	●						●
Prefilter with water separator: drain water	●						●
• Clean				●			
Check V-belt condition and tension	●						●
Check V-belt condition and tension	●						●
Check exhaust system for damage and condition	●						●
Check valve clearance. Adjust if necessary					●		
Fuel injection pump						●	

5.13 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	Every 50 s/h	Every 250 s/h	Every 500 s/h	Once a year or after 1000 s/h	After 1500 s/h	Customer
Injection and pressure					●		
Check injection nozzles and valves [6]						●	
Empty diesel fuel tank				●			
Check battery electrolyte. Fill up with distilled water if necessary		●		●			●
Tire check (damage, air pressure, tread depth)	●						●
Wheel nuts		●					●
Check alternator, starter and electric connections, bearing play and function				●			
Preheating system, electric connections				●			
Pressure check of primary pressure limiting valves [7]		●		●			
Check piston rods for damage	●						●
Check screws for tightness		●		●			
Pin lock	●						●
Line fixtures	●						●
Check indicators for correct function		●		●			
Insulating mats in engine compartment		●		●			
Cleanliness of access	●						●
Adhesive labels and Operator's Manual		●		●			
Engine cover gas strut	●						●
Lubrication service ( ):							
Lubricate the following assemblies/components:– *see Lubrication plan* on page 5-36							

5.13 Maintenance plan (overview)

Work description

For service and maintenance work on the attachment, please refer to the operation and maintenance manual of the attachment manufacturer as well.

	Maintenance plan/service hours (s/h)						
	Maintenance work (once a day)	Every 50 s/h	Every 250 s/h	Every 500 s/h	Once a year or after 1000 s/h	After 1500 s/h	Customer
• Steering ram	●						●
• Tilt ram – offset ram	●						●
• Articulated joint	●						●

1. Drain engine oil the first time after 50 s/h, then every 250 s/h
2. Replace the engine oil filter the first time after 50 s/h, then every 250 s/h
3. Replace the fuel filter the first time after 50 s/h, then every 250 s/h
4. Replace the hydraulic oil filter insert the first time after 50 s/h, then every 500 s/h
5. Clean the water ducts every other 1000 s/h servicing
6. Check the injection nozzles and the valves every other 1500 s/h servicing
7. Check the first time at 50 s/h, then every 500 s/h

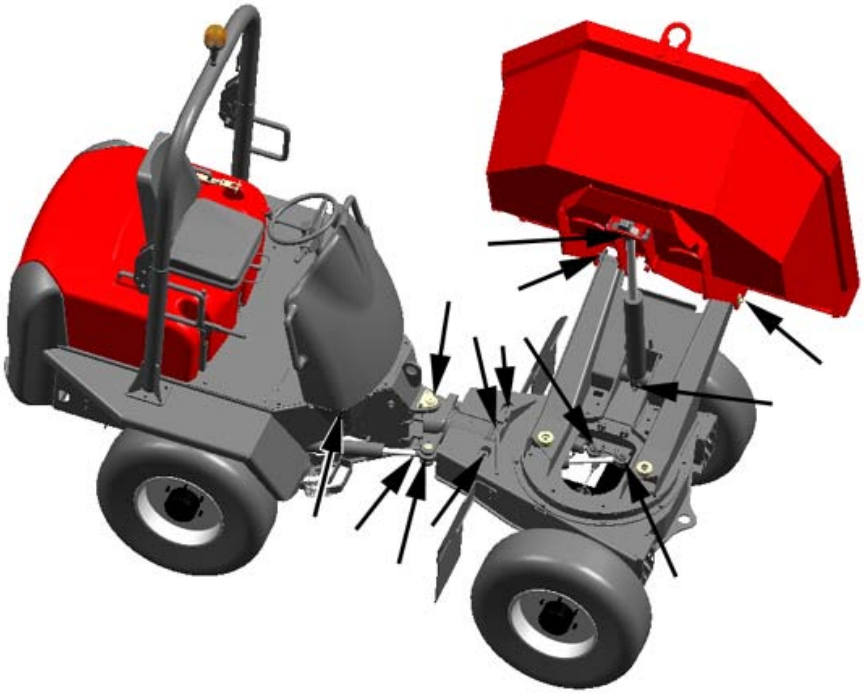
5.14 Lubrication plan

Lubricate all points daily with FINA ENERGREASE L21M or Mobilgrease CM-P.

Mount the red maintenance strut before carrying out maintenance work with the sump bucket raised!

3001 dump bucket

3001 dump bucket



6 Specifications

6.1 Chassis

Sturdy steel sheet chassis, rubber-mounted engine

6.2 Engine

Engine	**Model 3001 Tier II From serial number: AC310003 Up to serial number: AD310241**	**Model 3001 Tier III From serial number: AE310242**
Product	Yanmar diesel engine	
Type	3TNV88-KNSV	3TNV88-BKNSV
Design	water-cooled 4-stroke-diesel engine	
No. of cylinders	3	
Displacement	1642 cm³ (100 2 in^3)	
Nominal bore and stroke	88 x 90 mm (3.46'' x 3.54'')	
Output	26 kW +/- 5% at 2800 rpm	
Interm. torque	108,9 Nm (80,3 lbf ft)at 1680 rpm	Glow plug (preheating time 10-15 sec.)
Max. engine speed without load	2800 rpm +/- 25 rpm	
Idling speed	~1000 rpm +/- 25 rpm	
Fuel injection system	Direct injection	
Starting aid	Glow plug (preheating time 10 – 15 seconds)	Glow elements (preheating time 10 – 15 seconds)
Max. inclined position (engine no longer supplied with oil):	30° In all directions	
Exhaust values according to	97/68/EG- Tier 2 EPA-Tier 2	97/68/EG- Tier 3 EPA-Tier 3

6.3 Drive Pump

Variable displacement pump	**Model 3001**
Design	Axial piston pump
Displacement	45 cm³/rev (2.7 in^3)
Flow rate	126 l/min (33.3 gpm)
Max. service pressure	360 bar (5221.4 psi)
Boost pump (integrated in variable displacement pump)	
Design	Gear pump
Displacement	8.4 cm³ (0.5 in^3)
Charging/boost pressure	25 bar (362.6 psi)

6.4 Brakes

Service brake/parking brake	Model 3001
Design	Wet multidisc brakes
Location	Front axle
Effect	Hydraulic service brake; mechanical parking brake

6.5 Steering system

Steering system	Model 3001
Design	Hydrostatic
Steering mode	Chassis articulation steering

6.6 Work hydraulics

Work hydraulics	Model 3001
Hydraulic pump displacement	16.2 cm³/rev
Hydraulic pump flow rate	45 l/min (11.9 gpm)
Max. service pressure	200 bar (2900.7 psi)
Secondary pressure limiting for offset ram	160 bar (2320 psi)
Hydraulic tank capacity	48 l (12.7 gal)
Steering system	150 bar (2175.6 psi)

6.7 Dump bucket

Dump bucket	Model 3001 F	Model 3001S
Dump bucket capacity	1500 l struck (396 gal)	1300 l struck (343 gal)
	1850 l heaped (489 gal)	1750 l heaped (462 gal)
	1160 l water level (306.4 gal)	900 l water level 237.8 gal)
Payload	3000 kg (6613.9 lbs)	
Swivel angle	180 – 217°	

6.8 Drive specifications

Drive system	Model 3001 F	Model 3001S
Drive speed I	0 – 7 kph (4.4 mph)	
Drive speed II	0 – 22 kph (13.7 mph)	
Articulation	+/- 37°	
Oscillation	+/- 15°	
Outside turning radius	4000 mm (13’ 1.5’’)	3950 mm (12’ 12’’)
Hill climbing ability	50 % (theoretically)	
Safe authorized inclination	25 % in all drive positions left/right	

6.9 Electric system

Electric system	
Alternator	12 V 40 A
Starter	12 V 1.4 kW
Battery	12 V 88 Ah

Fuse box

Fig. 25: Fuse box

Fuse number	Rated current (A)	Protected circuit
F 3	10 A	– Cutoff solenoid, cutoff solenoid time lag relay
F 4	15 A	– Drive solenoid valves
F 5	10 A	– Horn, brake lights
F 6	15 A	– Turn indicators
F 7	15 A	– High beam
F 8	10 A	– Low beam
F 9	10 A	– Position light
F 10	10 A	– Hazard warning system

Relays

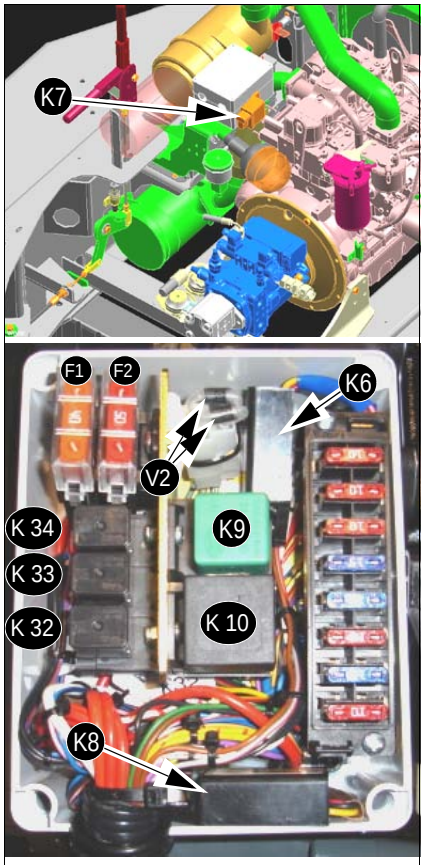


Fig. 26: Relays

The relays are located in the relay box under the the floor panel of the control stand

Switching relay no.	Protected circuit
F1, F2	– Main fuses
K 6	– Preheating time lag relay
K7	– Start high current relay
K 8	– Cutoff solenoid time lag relay
K 9	– Cutoff solenoid switching relay
K 10	– Turn indicator relay
K32	– Start interlock relay
K33	– Low beam relay
K34	– High beam relay
V2	– Diodes

6.10 Tires

Type	Tire size	Tire pressure		
		Front	Rear	Load-bearing capacity
3001	11.5/80 x 15.3	4 bar (58 psi)	4 bar (58 psi)	PR 10

6.11 Noise levels

Sound power level	3001
Sound power level (L_{WA})	101 dB (A)
Sound pressure level (L_{PA})	85 dB (A)

Important

Measurement of sound power level according to EC Directive 2000/14 EC.
Noise level at the driver's ear measured according to EC Directives 84/532/EEC, 89/514/EEC and 95/27/EEC.
Measurements carried out on asphalted surface.

6.12 Coolant compound table

Outside temperature	**Coolant**			
	Water	Anticorrosion agent		Antifreeze agent
Up to °C (°F)	% by volume	cm³/l (oz/gal)	% by volume	% by volume
4 (39.2)	99	10 (1.28)	1	–
-10 (14)	79			20
-20 (-4)	65			34
-25 (-13)	59			40
-30 (-22)	55			44

6.13 Dimensions model 3001 front dump bucket

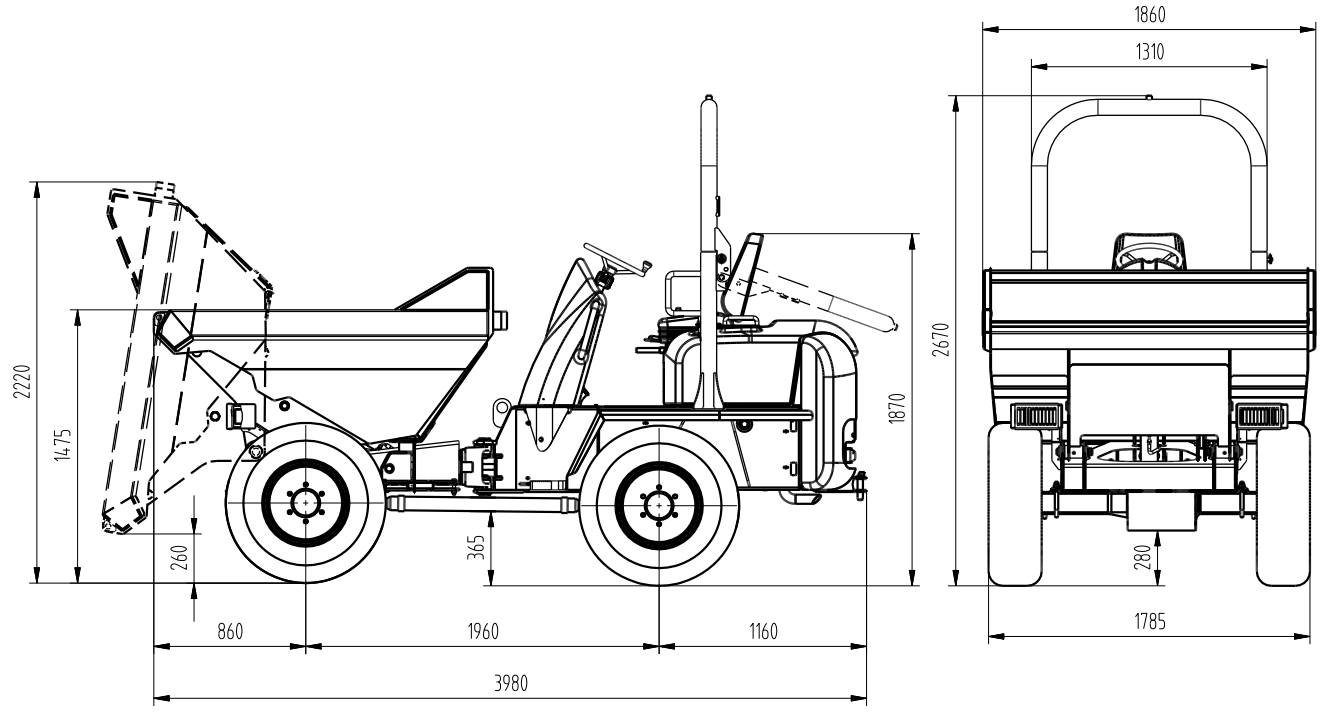


Fig. 27: Machine dimensions (model 3001 F)

The measurements are Metric (Imperial)

Main data	Model 3001 F
Dead weight	2450 kg (5401 lb)
Overall height	2670 mm (8’ 9’’)
Overall height with rollbar folded down	1870 mm (6’ 2’’)
Overall height without rollbar	1870 mm (6’ 2’’)
Overall width	1785 mm (6’ 10’’)
Ground clearance	280 mm (11’’)
Wheelbase	1960 mm(6’ 5.2’’)
Outside turning radius	4000 mm (13’ 1.5’’)
Hill climbing ability	50 % theoretically
Safe authorized inclination	25 % in all drive positions

6.14 Dimensions model 3001 swivel dump bucket

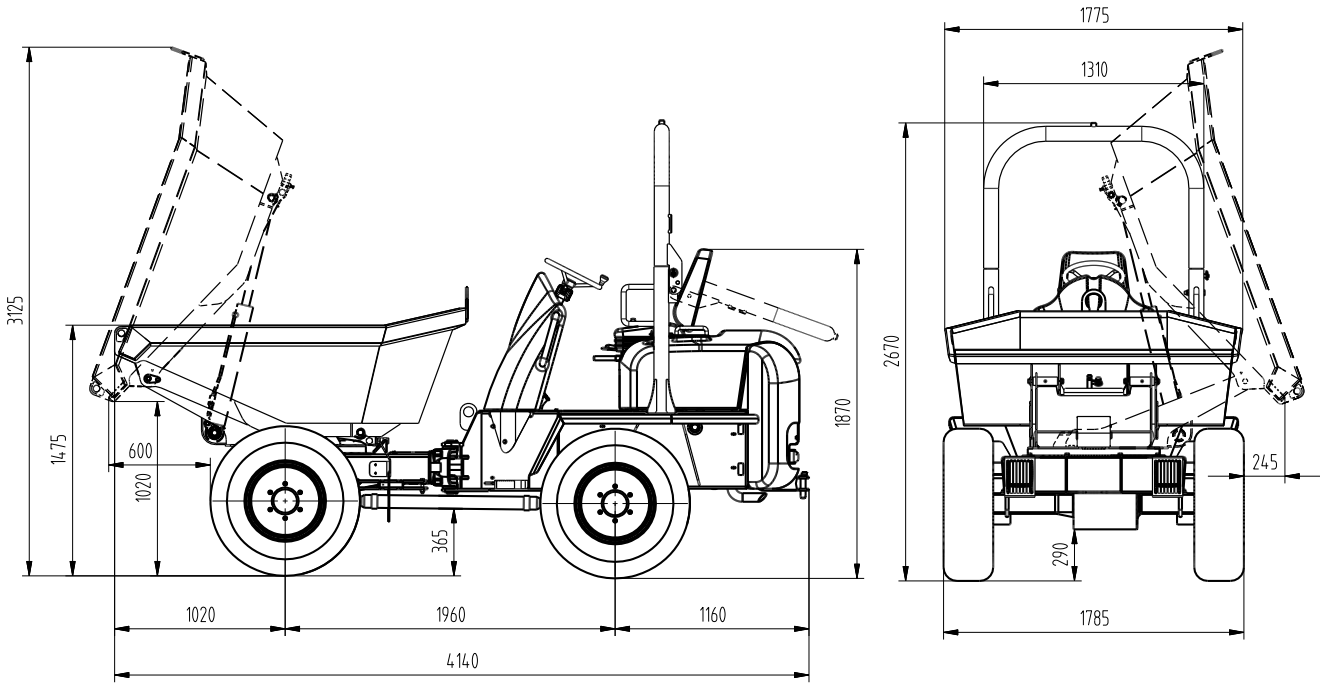


Fig. 28: Machine dimensions (model 3001S)

The measurements are Metric (Imperial)

Main data	Model 3001S
Dead weight	2550 kg (5621.8 lb)
Overall height	2670 mm (9’ 9’’)
Overall height with rollbar folded down	1870 mm (6’ 2’’)
Overall height without rollbar	1870 mm (6’ 1.6’’)
Overall width	1785 mm (6’ 10’’)
Ground clearance	290 mm (11’’)
Wheelbase	1960 mm (6’ 5’’)
Outside turning radius	3950 mm (12.9’ 12’’)
Hill climbing ability	50 % theoretically
Safe authorized inclination	25 % in all drive positions

Wacker Neuson Corporation
P. O. Box 9007
Menomonee Falls, WI 53052-9007
Telephone: (262) 255-0500
Fax: (262) 255-0550
Telephone: (800) 770-0957
www.wackerneuson.com

Neuson Limited
Crown Business Park
Tredegar
Gwent South Wales NP22 4EF
Telephone +44 (0) 1495 723083
Fax +44 (0) 1495 713941
E-mail: office@liftondumpers.com
www.neusonkramer.com

Neuson Baumaschinen GmbH
Haidfeldstr. 37
A-4060 Linz/Leonding
Telephone +43 (0) 732/90590-0
Fax +43 (0) 732/90590-0
E-mail: office@neuson.com
www.neusonkramer.com